Ruckus Wireless™ ZoneFlex™ Access Point

Release 9.0 User Guide

For the following ZoneFlex AP models:

- ZoneFlex 2942 802.11g Access Point
- ZoneFlex 2741 802.11g Outdoor Access Point
- ZoneFlex 7942 802.11n Access Point
- ZoneFlex 7962 Dual Band 802.11n Access Point
- ZoneFlex 7762 Dual Band 802.11n Smart Wi-Fi Access Point
- ZoneFlex 7343 2.4GHz 802.11n Smart Wi-Fi Access Point
- ZoneFlex 7363 Dual Band 802.11n Smart Wi-Fi Access Point

Part Number 800-70276-001
Published July 2010

www.ruckuswireless.com

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About This Guide

This guide describes how to install, configure, and manage the Ruckus Wireless™ ZoneFlex™ Access Point. This guide is written for those responsible for installing and managing network equipment. Consequently, it assumes that the reader has basic working knowledge of local area networking, wireless networking, and wireless devices.

NOTE: If release notes are shipped with your product and the information there differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the Ruckus Wireless Support Web site at:

http://support.ruckuswireless.com/

Document Conventions

Table 1 and Table 2 list the text and notice conventions that are used throughout this guide.

Table 1. Text Conventions

Convention	Description	Example
`monospace`	Represents information as it appears on screen	`[Device name]>`
`monospace bold`	Represents information that you enter	`[Device name]>` **`set ipaddr 10.0.0.12`**
default font bold	Keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs**.
italics	Screen or page names	Click **Advanced Settings**. The *Advanced Settings* page appears.

Table 2. Notice Conventions

Icon	Notice Type	Description
	Information	Information that describes important features or instructions
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device
	Warning	Information that alerts you to potential personal injury

Related Documentation

In addition to this User Guide, each ZoneFlex Access Point documentation set includes the following:

- *Quick Setup Guide/Getting Started Guide*: Provides essential installation and configuration information to help you get the AP up and running within minutes.
- *Online Help*: Provides instructions for performing tasks using the Access Point's Web interface. The online help is accessible from the Web interface.
- *Release Notes*: Provide information about the current software release, including new features, enhancements, and known issues.

Additionally, the ZoneDirector User Guide provides information on managing a ZoneFlex wireless network using a centralized Ruckus Wireless ZoneDirector WLAN controller. If you will be managing your ZoneFlex access points using ZoneDirector, refer to the ZoneDirector User Guide, available on the Ruckus Wireless website at http://support.ruckuswireless.com/downloads

Documentation Feedback

Ruckus Wireless is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Ruckus Wireless at:

docs@ruckuswireless.com

When contacting us, please include the following information:

- Document title
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- Ruckus Wireless ZoneFlex Access Point Release 8.2 User Guide

- Part number: 800-70276-001 (Rev. B)
- Page 88

1

Introducing the ZoneFlex Access Point

In This Chapter

Overview of the ZoneFlex Access Point 1
Unpacking the ZoneFlex Access Point 2
Getting to Know the Access Point Features 2

Overview of the ZoneFlex Access Point

Congratulations on your purchase of the Ruckus Wireless ZoneFlex Access Point! ZoneFlex Access Points are the industry's first centrally-managed Wi-Fi access points that are capable of extending wireless signals two to four times farther than a conventional access point.

Your ZoneFlex Access Point uses BeamFlex™, a patent-pending antenna technology from Ruckus Wireless that allows wireless signals to navigate around interference, extend wireless signal range, and increase speeds and capacity for wireless networks. The BeamFlex™ antenna system consists of an array of up to fourteen high-gain directional antenna elements that allow ZoneFlex Access Points to find quality signal paths in a changing environment, and sustain the baseline performance required for supporting data, audio and video applications.

Your ZoneFlex Access Point can be deployed in standalone mode or as part of the ZoneFlex Smart WLAN system, in which it can be managed by either FlexMaster or ZoneDirector WLAN controller.

NOTE: For more information on the ZoneFlex system (including FlexMaster and ZoneDirector), BeamFlex, and other Ruckus Wireless technologies, visit www.ruckuswireless.com.

Unpacking the ZoneFlex Access Point

1. Open the Access Point package, and then carefully remove the contents.
2. Return all packing materials to the shipping box, and put the box away in a dry location.
3. Verify that all items listed in Package Contents below are included in the package. Check each item for damage. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

Package Contents

A complete Access Point package contains all of the items listed below:

- ZoneFlex Access Point
- A 3-foot (0.9 meter) Category 5 Ethernet cable
- A power supply adapter
- Software License Agreement/Product Warranty Statement
- A *Quick Setup Guide* for ZoneFlex indoor APs or a *Getting Started Guide* for ZoneFlex outdoor APs
- A mounting kit with printed instructions (includes the following):
  - Indoor APs: Wall mounting screws, anchors, printed instructions
  - Outdoor APs: Wall/ceiling/pole mounting brackets, printed instructions

Getting to Know the Access Point Features

This section identifies the physical features of each ZoneFlex Access Point model that is discussed in this guide. Before you begin the installation process, Ruckus Wireless recommends that you become familiar with these features.

- ZoneFlex 2942/7942 Access Point
- ZoneFlex 7962 Access Point
- ZoneFlex 7343 Access Point
- ZoneFlex 7363 Access Point
- ZoneFlex 2741 Outdoor Access Point
- ZoneFlex 7762 Outdoor Access Point

NOTE: For more information on the physical features of ZoneFlex 2741 and ZoneFlex 7762 outdoor APs, refer to their respective *Getting Started Guide*s.

ZoneFlex 2942/7942 Access Point

The side panel of ZoneFlex 2942/7942 features four LED indicators that can be used to assess both device and network status. The rear view displays the connector panel, which includes the LAN ports and the optional external antenna connection. Refer to the following illustrations and tables to learn more.

Side Panel Features

The ZoneFlex 2942/7942 chassis includes a Kensington lock (on the side of the unit opposite the OPT and DIR LEDs) and a lockable "sliding door" (shown in Figure 1) that hides and protects the rear connector I/O panel and status LEDs. As your AP may be placed in a public location, the lock and door mechanisms can help prevent tampering or theft.

Figure 1. ZoneFlex 2942/7942 side panel features

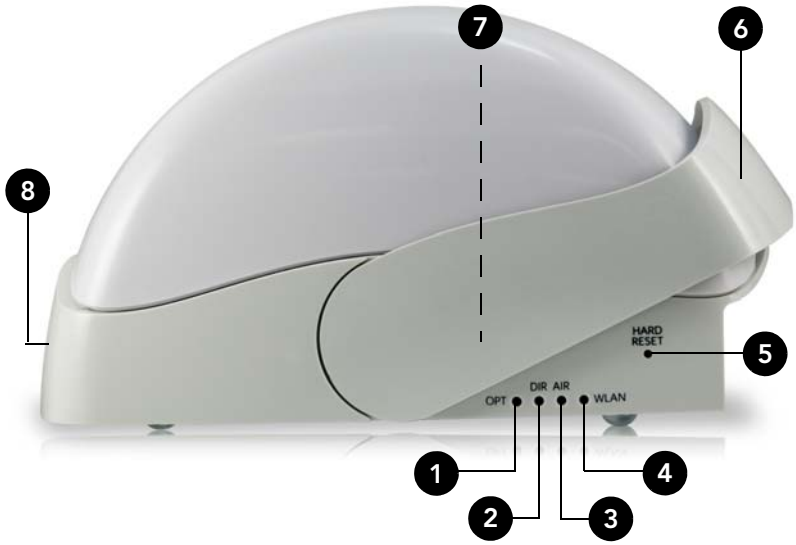


Table 3 lists the various LED states on ZoneFlex 2942/7942 and describes what each LED state means. It also describes how to use the HARD RESET button and other elements on the side panel.

Table 3. ZoneFlex 2942/7942 side panel elements

Number	LED/Button Name	Description
1	OPT LED	Not used in this model

Table 3. ZoneFlex 2942/7942 side panel elements

Number	LED/Button Name	Description
2	DIR LED	• *Off*: The Access Point is not being managed by ZoneDirector (standalone mode). • *Green*: The Access Point is being managed by ZoneDirector. • *Slow flashing green (one flash every two seconds):* The Access Point is being managed by ZoneDirector, but is currently unable to communicate with ZoneDirector. • *Fast flashing green (two flashes every second):* The Access Point is being managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update.
3	AIR LED	• *Off*: The WLAN service is down. • *Green*: The AP is functioning as a Root AP (RAP) or Mesh AP (MAP), and the uplink signal is *good*. • *Slow flashing green (one flash every two seconds)*: Mesh networking is enabled, but the AP is still searching for a mesh uplink. • *Fast flashing green (two flashes every second)*: The Access Point is functioning as a Mesh AP and the wireless signal to its uplink AP is *fair*.
4	WLAN LED	• *Off*: The WLAN service is down. • *Amber*: The WLAN is up, but no clients are associated and no downlink MAPs are connected. • *Green*: The WLAN is up and at least one client is associated. No downlink MAPs are connected. • *Slow flashing green (one flash every two seconds)*: The WLAN is up and at least one downlink MAP is connected. No clients are associated. • *Fast flashing green (two flashes every second)*: The WLAN is up, at least one downlink MAP is connected, and at least one client is associated.
5	HARD RESET Button	Pushing and quickly releasing this button reboots the AP. Pushing and holding it for six seconds resets the AP to factory defaults.
6	Sliding Door	Protects the ports, buttons, and connector on rear panel

Table 3. ZoneFlex 2942/7942 side panel elements

Number	LED/Button Name	Description
7	Kensington Lock	The Kensington lock feature, located on the opposite side of the unit from the pictured LEDs, is designed to prevent the sliding door from opening, thus locking the unit. The Kensington lock works with a Kensington MicroSaver lock.
8	Power LED (front)	• *Off*: Off • *Red*: Boot up in process • *Green*: On

Rear Panel Features

Figure 2 shows the rear panel of ZoneFlex 2942/7942. For a description of each rear panel part, refer to Table 4.

Figure 2. ZoneFlex 2942/7942 rear panel features

WARNING: *For units with Power over Ethernet (PoE).* These products and all interconnected equipment must be installed indoors within the same building, including the associated LAN connections, as defined by Environment A of the IEEE 802.3af Standard.

CAUTION: The external antenna connectors are for indoor use only. Do not connect them to outdoor antennas.

Table 4. ZoneFlex 2942/7942 rear panel elements

Number	Item Name	Description
1	Power	Connect the power adapter to this socket. (Input 110-240V AC, Output 12V 1.0A DC). Power can also be supplied via 10/100 PoE port.
2	Lock Hasp	The lock hasp works with a cable or Ruckus mounts. The recommended lock type is Masterlock 120 series (D, T, Q, KAD types).
3	External RP-SMA Connector	• ZoneFlex 2942: One external antenna connector • ZoneFlex 7942: None
4	LAN Ports	• ZoneFlex 2942: Two RJ-45 ports, supporting 10/100 PoE (Power over Ethernet) and 10/100Mbps connections. • ZoneFlex 7942: Two RJ-45 ports, supporting 10/100/1000 PoE (Power over Ethernet) and 10/100/1000Mbps connections. Each Ethernet port has two LEDs, which indicate the type of device that is connected to the port.
5	OPTIONAL Button	Not active in this model at this time.
6	SOFT RESET Button	Used to reset the AP. This is a normal reset and does not reset the AP back to factory defaults.

Table 5. Behavior of Ethernet port LEDs on ZoneFlex 2942/7942

LEDs	Description
Off	Not connected
Steady flashing Amber + Green	Connected to 10Mbps device
Steady flashing Amber	Connected to 100Mbps device
Steady flashing Green	Connected to 1000Mbps device
Intermittent flashing Amber + Green	Connected to 10Mbps device, and passing traffic
Intermittent flashing Amber	Connected to 100Mbps device, passing traffic
Intermittent flashing Green	Connected to 1000Mbps device, passing traffic

ZoneFlex 7962 Access Point

The physical features of ZoneFlex 7962 are very similar to ZoneFlex 2942/7942. It uses the same dome-type chassis with the sliding door and Kensington lock on the side panel. There are slight differences, however, in the side panel and rear panel elements. Refer to the illustrations below for more information.

Side Panel Features

Figure 3 illustrates the side panel features of ZoneFlex 7962. For a description of each rear panel part, refer to Table 6.

Figure 3. ZoneFlex 7962 side panel

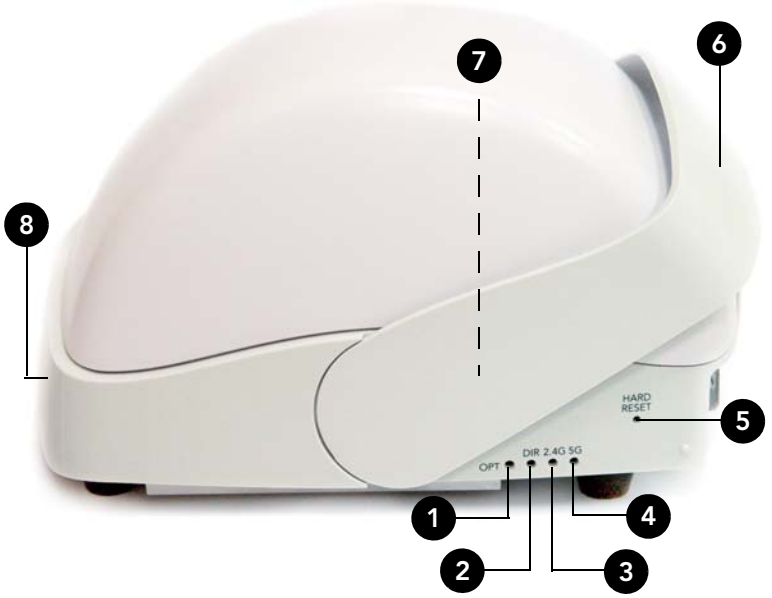


Table 6. ZoneFlex 7962 side panel elements

Number	LED/Button Name	Description
1	OPT LED	Not used in this model

Table 6. ZoneFlex 7962 side panel elements

Number	LED/Button Name	Description
2	DIR LED	• *Off*: The Access Point is not being managed by ZoneDirector (standalone mode). • *Green*: The Access Point is being managed by ZoneDirector. • *Slow flashing green (one flash every two seconds):* The Access Point is being managed by ZoneDirector, but is currently unable to communicate with ZoneDirector. • *Fast flashing green (two flashes every second):* The Access Point is being managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update.
3	2.4G LED (WLAN)	• *Off*: The WLAN service is down. • *Amber*: The WLAN service is up, at least one wireless client is associated (standalone), or at least one downlink MAP is connected (RAP), or uplink RAP is connected (MAP), but signal quality is *poor* (RSSI < 15). • *Green*: The WLAN service is up, at least one client is associated (standalone), or at least one downlink MAP is connected (RAP), or uplink RAP is connected (MAP), and signal quality is *good* (RSSI >= 15). • *Flashing green*: The WLAN service is up, no clients are associated (standalone), no downlink MAPs are connected (RAP), or no uplink RAP is connected (MAP).
4	5G LED (WLAN)	• *Off*: The WLAN service is down. • *Green*: The WLAN service is up and at least one wireless client is associated. • *Fast flashing green (two flashes every second)*: The WLAN service is up and no wireless clients are associated. • *Slow flashing green*: zMesh AP searching for an uplink, or searching for ZoneDirector.

Table 6. ZoneFlex 7962 side panel elements

Number	LED/Button Name	Description
5	HARD RESET Button	Pushing and quickly releasing this internal button reboots the AP. Pushing and holding it for six seconds resets the AP to factory default settings. CAUTION! Resetting the AP to factory default settings will erase all settings that you configured previously.
6	Sliding Door	Protects the ports, buttons, and connector on the rear panel
7	Kensington Lock	The Kensington lock feature, located on the opposite side of the unit from the pictured LEDs, is designed to prevent the sliding door from opening, thus locking the unit. The Kensington lock works with a Kensington MicroSaver lock.
8	Power LED (front)	• *Off*: Off. • *Amber*: Boot up in process. • *Green*: On.

Rear Panel Features

Figure 4 shows the rear panel of ZoneFlex 7962. For a description of each rear panel part, refer to Table 6.

Figure 4. ZoneFlex 7962 rear panel features

Table 7. ZoneFlex 7962 rear panel elements

Number	Item Name	Description
1	Power	Connect the power adapter to this socket. (Input 110-240V AC, Output 12V 1.0A DC). Power can also be supplied via the 10/100/1000 PoE port.
2	Lock Hasp	The lock hasp works with a cable or Ruckus Wireless mounts. The recommended lock type is Masterlock 120 series (D, T, Q, KAD types).
3	LAN Ports	Two RJ-45 ports, one for a 10/100/1000 PoE (Power over Ethernet) connection and another for a 10/100/1000Mbps connection. Each Ethernet port has two LEDs, which indicate the type of device that is connected to the port. • Flashing green + amber: 10Mbps Layer 2 device • Flashing amber: 100Mbps Layer 2 device • Flashing green: 1000Mbps Layer 2 device

Table 7. ZoneFlex 7962 rear panel elements

Number	Item Name	Description
4	OPTIONAL Button	Not active in this model at this time.
5	SOFT RESET Button	Use to reset AP. This is a normal reset and does not set AP back to factory defaults.

ZoneFlex 7343 Access Point

ZoneFlex 7343 features five LEDs on its front panel, and buttons and connectors on its rear panel.

Front Panel

Figure 5 shows the front panel of ZoneFlex 7343. For a description of each front panel part, refer to Table 8.

Figure 5. ZoneFlex 7343 front panel

Table 8. ZoneFlex 7343 front panel elements

LED	Description
PWR LED	• *Off*: Off. • *Red*: Boot up in process. • *Green*: On.
OPT LED	Not used in this model

Table 8. ZoneFlex 7343 front panel elements

LED	Description
DIR LED	• *Off*: The Access Point is not being managed by ZoneDirector (standalone mode). • *Green*: The Access Point is being managed by ZoneDirector. • *Slow flashing green* (one flash every two seconds): The Access Point is being managed by ZoneDirector, but is currently unable to communicate with ZoneDirector. • *Fast flashing green* (two flashes every second): The Access Point is being managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update.
WLAN LED	• *Off*: The WLAN service is down. • *Amber:* The WLAN service is up and no clients are associated (standalone), or no wireless clients and no downlink MAPs are connected (RAP). • *Green*: The WLAN service is up and at least one wireless client is associated. If Mesh is enabled, no downlink MAPs are connected. • *Fast flashing green*: The WLAN service is up, at least one client is associated, and at least one Mesh downlink is connected. • *Slow flashing green*: At least one Mesh downlink is connected, and no clients are associated.
AIR LED	• *Off*: The WLAN service is down. • *Green*: The AP is functioning as a RAP or MAP and the uplink signal is *good*. • *Slow flashing green (one flash every two seconds)*: Mesh networking is enabled, but the AP is still searching for a mesh uplink. • *Fast flashing green (two flashes every second)*: The AP is functioning as a MAP and the wireless signal to its uplink AP is *fair*.

Rear Panel

Figure 6 shows the rear panel of ZoneFlex 7343. For a description of each rear panel part, refer to Table 9.

Figure 6. ZoneFlex 7343 rear panel

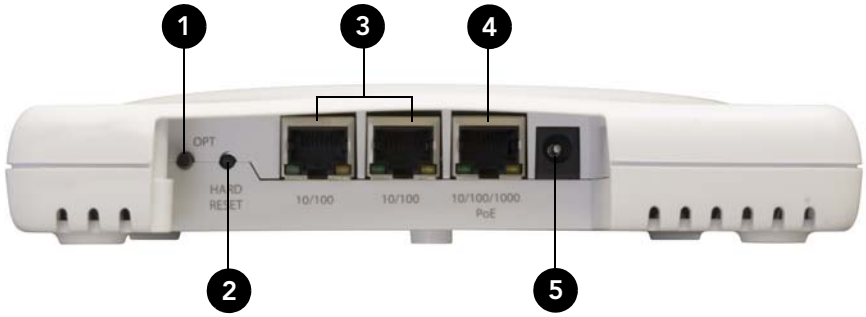


Table 9. ZoneFlex 7343 rear panel elements

Number	Item Name	Description
1	OPT Button	Not active in this model at this time.
2	HARD RESET Button	Pressing, and then quickly releasing this internal button reboots the AP. Pressing and holding it for six seconds resets the AP to factory default settings. *CAUTION! Resetting the AP to factory default settings will erase all settings that you configured previously.*
3	10/100 Ports (2)	Two RJ-45 ports for 10/100Mbps connections.
4	10/100/1000 Port	One RJ-45 port for a 10/100/1000 PoE (Power over Ethernet, 802.3af) connection.
5	Power	Connect the power adapter (12 VDC/1.25A) to this socket. Power can also be supplied via the 10/100/1000 PoE (802.3af) port.

ZoneFlex 7363 Access Point

ZoneFlex 7363 features five LEDs on its front panel, and buttons and connectors on its rear panel.

Front Panel

Figure 7 shows the front panel of ZoneFlex 7363. For a description of each front panel part, refer to Table 10.

Figure 7. ZoneFlex 7363 front panel

Table 10. ZoneFlex 7363 front panel elements

LED	Description
PWR LED	• *Off*: Off. • *Amber*: Boot up in process. • *Green*: On.
OPT LED	Not used in this model
DIR LED	• *Off*: The AP is not being managed by ZoneDirector (standalone mode). • *Green*: The AP is being managed by ZoneDirector. • *Slow flashing green* (one flash every two seconds): The AP is being managed by ZoneDirector, but is currently unable to communicate with ZoneDirector. • *Fast flashing green* (two flashes every second): The AP is being managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update.

Table 10. ZoneFlex 7363 front panel elements

LED	Description
2.4G LED (WLAN)	• *Off*: The WLAN service is down. • *Amber*: The WLAN service is up and no wireless clients are associated. • *Green*: The WLAN service is up and at least one wireless client is associated. • *Flashing green* (two flashes every second): The WLAN service is up and no wireless clients are associated.
5G LED (WLAN)	• *Off*: The WLAN service is down. • *Amber:* The WLAN service (or mesh network) is up and at least one wireless client is associated, but RSSI is *low*. If mesh networking is enabled, at least one downlink MAP is connected. • *Green*: The wireless WLAN service (or mesh network) is up and at least one wireless client is associated. If mesh networking is enabled, at least one downlink MAP is connected. • *Fast flashing green (two flashes every second)*: The WLAN service (or mesh network) is up, but no wireless clients or downlink MAPs are currently associated. • *Slow flashing green (one flash every two seconds)*: The WLAN service is up, no wireless clients are currently associated, mesh networking is enabled and at least one downlink MAP is connected.

Rear Panel

Figure 8 shows the rear panel of ZoneFlex 7363. For a description of each rear panel part, refer to Table 11.

Figure 8. ZoneFlex 7363 rear panel

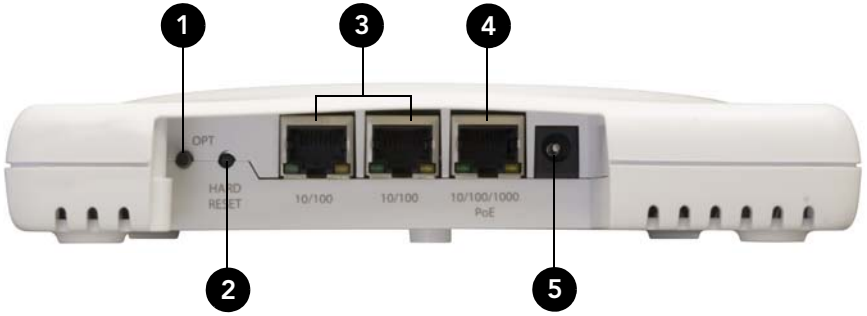


Table 11. ZoneFlex 7363 rear panel elements

Number	Item Name	Description
1	OPT Button	Not active in this model at this time.
2	HARD RESET Button	Pressing, and then quickly releasing this internal button reboots the AP. Pressing and holding it for six seconds resets the AP to factory default settings. *CAUTION! Resetting the AP to factory default settings will erase all settings that you configured previously.*
3	10/100 Ports (2)	Two RJ-45 ports for 10/100Mbps connections
4	10/100/1000 Port	One RJ-45 port for a 10/100/1000 PoE (Power over Ethernet, 802.3af) connection
5	Power	Connect the power adapter (12 VDC/1.25A) to this socket. Power can also be supplied via the 10/100/1000 PoE (802.3af) port.

ZoneFlex 2741 Outdoor Access Point

Figure 9 and Figure 10 identify the physical features of the ZoneFlex 2741 Outdoor Access Point. Ruckus Wireless recommends that you become familiar with these features.

Figure 9. ZoneFlex 2741 Outdoor Access Point LEDs and bottom connectors

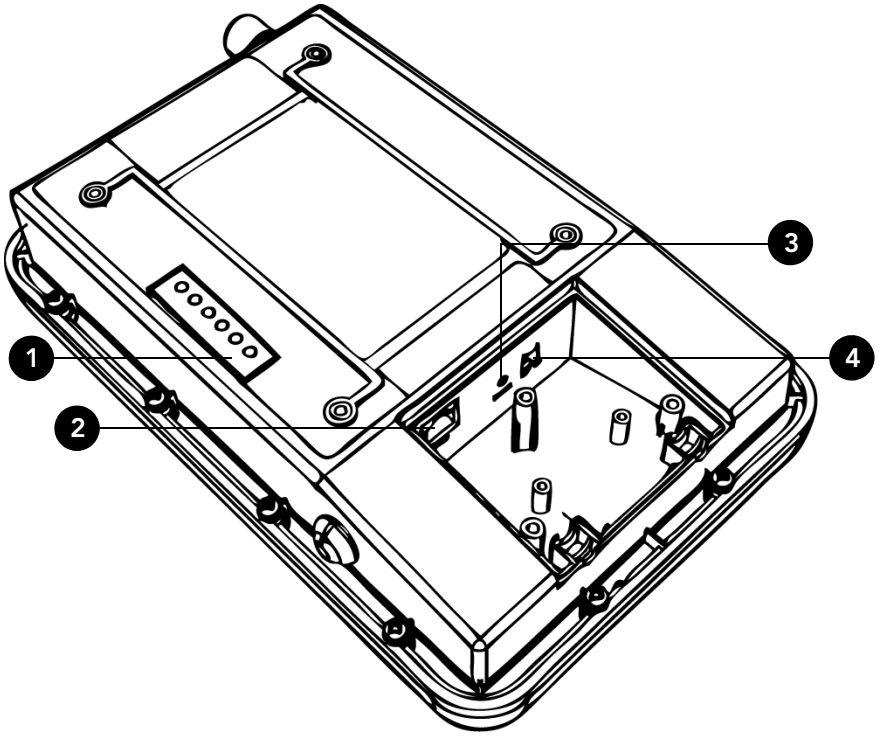


Table 12. ZoneFlex 2741 LEDs and bottom panel connectors

No	Label	Description
1	LEDs	See "LED Colors and What They Mean" below for more information.
2	RJ45	LAN port that supports Power over Ethernet (PoE) and 10/100Mbps network connections

Table 12. ZoneFlex 2741 LEDs and bottom panel connectors

No	Label	Description
3	Reset	Using a pointed object (for example, a pen), press this button to restart the Access Point or to restore it to factory default settings: • To restart the Access Point, press the Reset button once. • To restore the Access Point to factory defaults, press and hold the Reset button for six (6) seconds. *WARNING: Restoring the Access Point to factory default settings removes all configuration changes that you have made. These include the IP address, password, access control list, and wireless settings. Returning the configuration of these features to their factory default settings may result in network connectivity issues.*
4	12V DC	In addition to PoE, you can also use direct current or DC (from a battery, for example) to supply power to the Access Point.

LED Colors and What They Mean

Refer to Table 13 below for a list of LED states and what they indicate.

Table 13. ZoneFlex 2741 LED states and behaviors

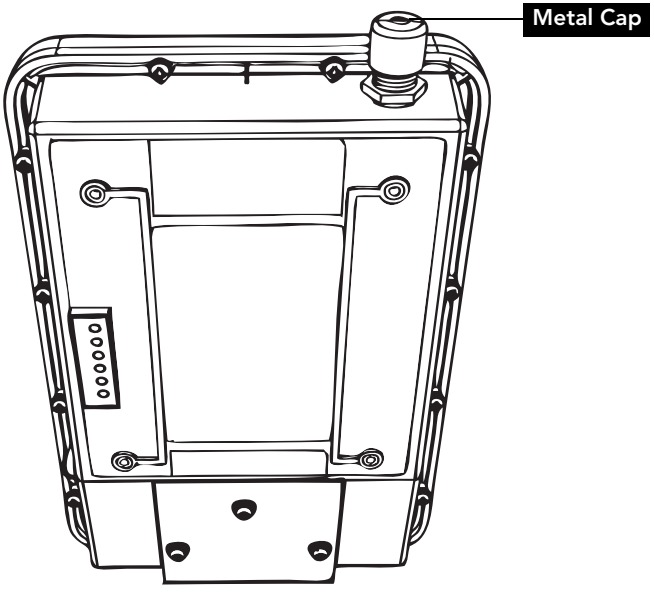
LED	Meaning
OPT	Not used in this model
DIR	• *Off*: The AP is not being managed by ZoneDirector (standalone mode). • *Green*: The AP is being managed by ZoneDirector. • *Slow flashing green (one flash every two seconds):* The AP is being managed by ZoneDirector, but is currently unable to communicate with ZoneDirector. • *Fast flashing green (two flashes every second):* The AP is being managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update.

Table 13. ZoneFlex 2741 LED states and behaviors

LED	Meaning
AIR	• *Off*: The WLAN service is down. • *Green*: The AP is functioning as a Root AP (RAP) or Mesh AP (MAP), and the uplink signal is *good*. • *Slow flashing green (one flash every two seconds)*: Mesh networking is enabled, but the AP is still searching for a mesh uplink. • *Fast flashing green (two flashes every second)*: The AP is functioning as a Mesh AP and the wireless signal to its uplink AP is *fair*.
WLAN	• *Green*: The WLAN service is up and at least one wireless client is associated. If mesh networking is enabled, there are no downlink MAPs connected. • *Fast flashing green (two flashes every second)*: The WLAN service is up and at least one wireless client is associated. Mesh networking is enabled and at least one downlink MAP is connected. • *Slow flashing green (one flash every two seconds)*: The WLAN service is up, but no wireless clients are currently associated with it. Mesh networking is enabled and at least one downlink MAP is connected to this Access Point. • *Off*: Either the WLAN is down, or it is up but no wireless clients are currently associated with it. If mesh networking is enabled, there are no downlink MAPs connected to this Access Point.
LAN	• *Green*: The LAN port is connected to a 10/100Mbps device. • *Flashing green*: Traffic is passing through the LAN port. • *Off*: The LAN port is not connected to any network device.
PWR	• *Green*: On. • *Off*: Off.

If you want to extend the range of your wireless network, you can connect an external high gain antenna to the standard N-type radio frequency (RF) antenna connector on the top panel of the Access Point. The antenna must have a gain of less than 9dBi to comply with FCC and CE regulations.

Figure 10. The antenna connector is protected by a metal cap



ZoneFlex 7762 Outdoor Access Point

Figure 11 and Figure 12 identify the physical features of the ZoneFlex 7762 Outdoor Access Point. Ruckus Wireless recommends that you become familiar with these features.

Figure 11. ZoneFlex 7762 Outdoor Access Point parts

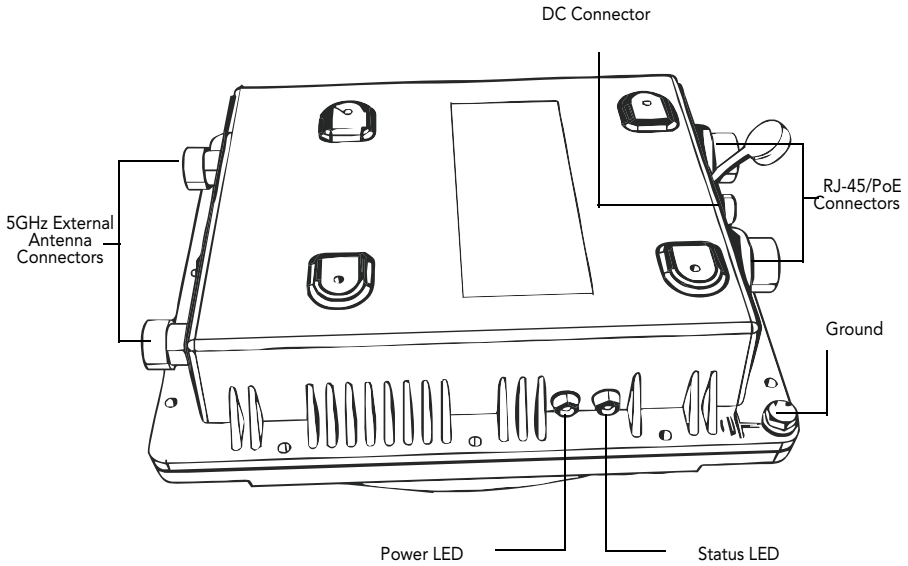


Table 14. ZoneFlex 7762 LEDs and connectors

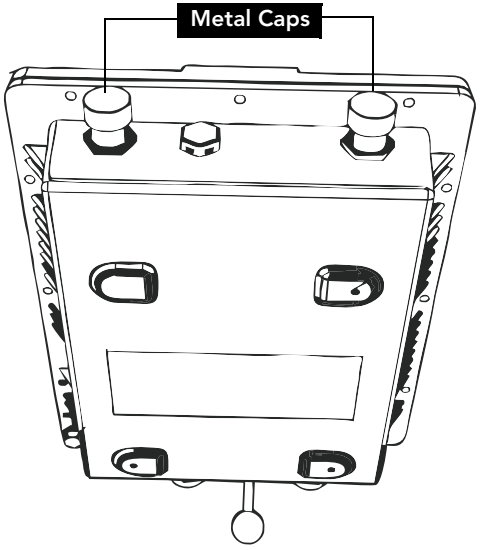
Label	Description
Power LED	• *Off*: Off. • *Red*: Boot up in process. • *Green*: On.

Table 14. ZoneFlex 7762 LEDs and connectors

Label	Description
Status LED	If the AP is operating in standalone mode: • *Amber*: The WLAN service is up and at least one wireless client is associated. • *Flashing amber*: The WLAN service is up and no wireless clients are currently associated. If the AP is being managed by Ruckus Wireless ZoneDirector: • *Green*: The AP is part of a mesh network (either as Root AP or Mesh AP) and is connected to an uplink with good signal. If mesh networking is disabled but the WLAN service is available, the Status LED is also green. • *Fast flashing green*: The AP is part of a mesh network (as Mesh AP) and is connected to an uplink with fair signal. • *Slow flashing green*: This Mesh AP is searching for an uplink or is attempting to establish communication with ZoneDirector. • *Off*: Mesh networking is disabled and the WLAN service is unavailable.
RJ45 Connectors	Two LAN ports that support Power over Ethernet (PoE): • **PoE IN** port: Supports 10/100/1000Mbps connections, connects to the network and receives 802.at PoE from the supplied PoE injector (if connected). • **PoE OUT** port: Supports 10/100/1000Mbps connections. If the supplied PoE injector is used, this port can supply 802.af PoE to the connected PoE-capable device (for example, another ZoneFlex 7762 AP or an IP-based surveillance camera). To use this port to supply PoE, you first need to enable the PoE feature on the Web interface. For more information, refer to page 52.
DC Connector	In addition to PoE, you can also use direct current or DC (from a battery, for example) to supply power to the Access Point.

If you want to extend the range of your wireless network, you can connect external high gain antennas (5GHz only) to the standard N-type radio frequency (RF) antenna connectors on the top panel of the Access Point. The 5GHz antennas must have a gain of less than 14dBi to comply with FCC and CE regulations.

Figure 12. The 5GHz antenna connectors are protected by metal caps



2

Installing the Access Point

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Step 2: Verify Access Point Operation 41
Step 3: Deploy the Access Point 44
Troubleshooting Installation 45

Before You Begin

Before starting with the installation, make sure that you have the required items for the installation ready. In addition, verify that the wireless stations on the network have the required components for wireless communication with the Access Point.

This section describes the pre-installation tasks that you need to perform.

Prepare the Required Hardware and Tools

You must supply the following tools and equipment:

- A notebook computer running Windows (2000/XP/Vista/7) with one wireless 802.11a/b/g/n network card and one Ethernet card installed
- A modem (DSL or cable), E1/T1 router, or other device provided by your Internet Service Provider, that brings Internet access to your site
- (Optional) A network switch or a DSL/Internet gateway device.

NOTE: If the AP is deployed with ZoneDirector, follow the instructions in the *ZoneDirector Quick Setup Guide*, and connect the AP to your Ethernet network.

Perform a Site Survey

Before installing the Access Point, perform a site survey to determine the optimal Access Point placement for maximum range, coverage, and network performance. When performing a site survey, consider the following factors:

- *Data rates*: Range is generally inversely proportional to data rates. The maximum radio range is achieved at the lowest workable data rate. Higher data rates will generally be achieved at closer distances.
- *Antenna type and placement*: Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, radio range is increased by mounting the antennas higher off of the ground.
- *Physical environment*: Clear or open areas provide better radio range than closed or filled areas. The less cluttered the operating environment, the greater the wireless range.
- *Obstructions, building materials, and sources of interference*: Physical obstructions, such as concrete pillars, steel beams, and filing cabinets, can block or hinder wireless communication. Avoid installing the Access Point in a location where there is an obstruction between sending and receiving devices. A number of machines and electronic devices that emit radio waves – cranes, wireless phones, microwave ovens, satellite dishes – interfere with and block wireless signals. Building materials used in construction also influence radio signal penetration. For example, drywall construction permits greater range than concrete blocks.

For more Access Point placement guidelines, refer to "Determine the Optimal Mounting Location and Orientation".

Determine the Optimal Mounting Location and Orientation

The location and orientation that you choose for the Access Point play a critical role in the performance of your wireless network. In general, Ruckus Wireless recommends installing the Access Point away from obstructions and sources of interference and ensuring that the top of the Access Point is pointing in the general direction of its wireless clients.

The recommended orientation differs slightly depending on the Access Point model. See the following sections according to your particular model:

- ZoneFlex 2942, 7942, 7962 Orientation
- ZoneFlex 7343 and 7363 Orientation

ZoneFlex 2942, 7942, 7962 Orientation

Figure 13. Recommended orientation for maximum horizontal plane coverage

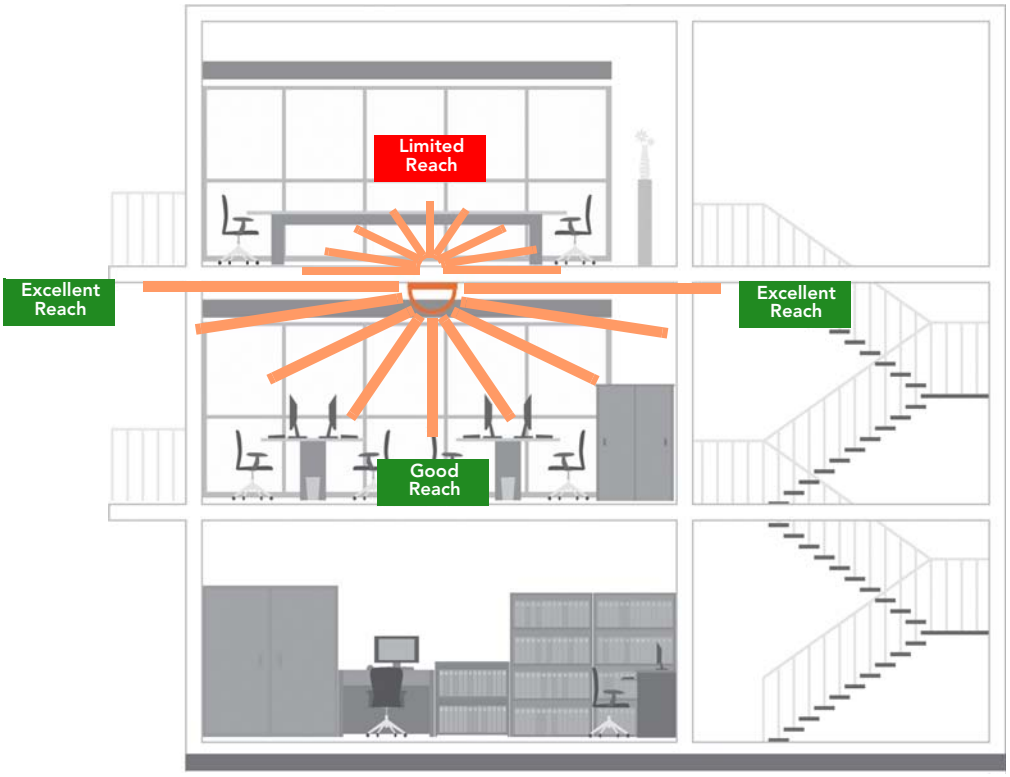


Figure 14. Recommended orientation for maximum vertical plane coverage

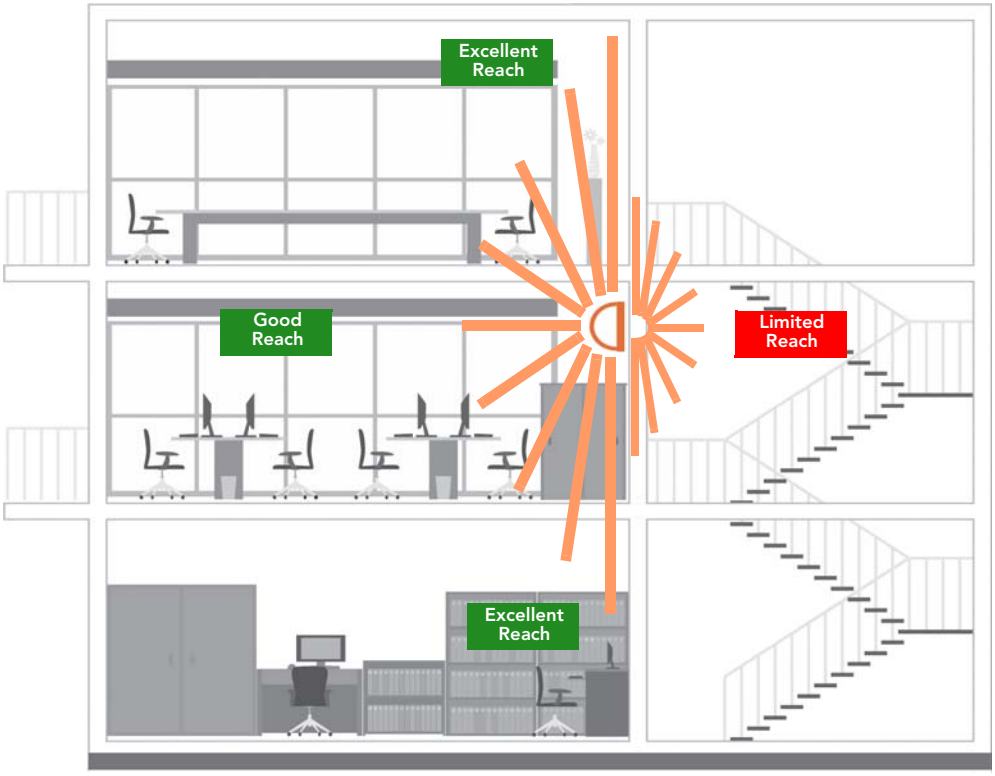
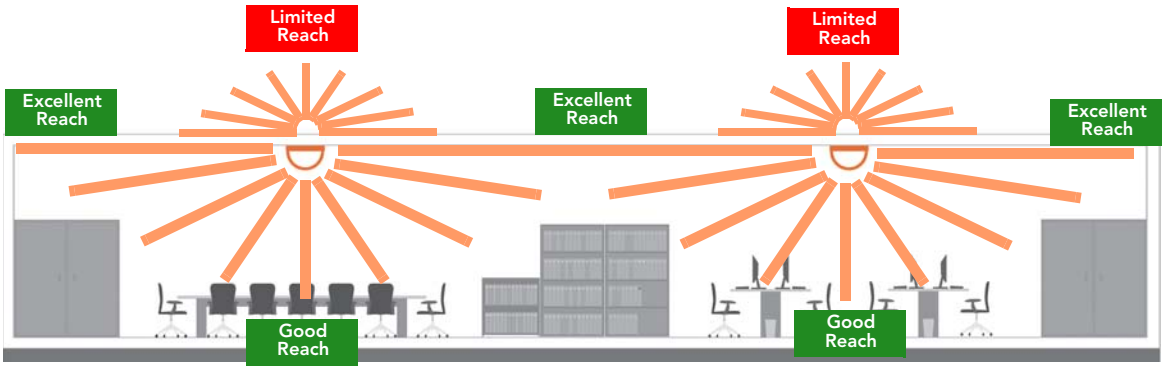


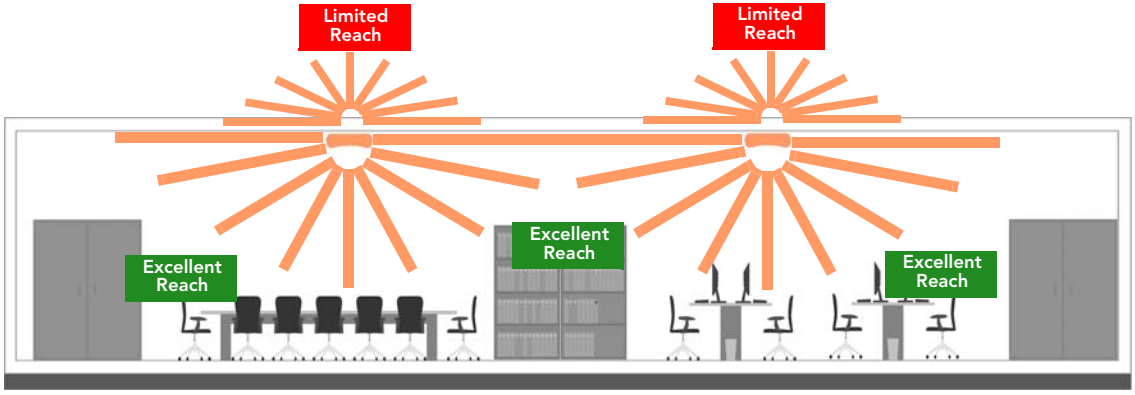
Figure 15. Recommended orientation for maximum mesh coverage



ZoneFlex 7343 and 7363 Orientation

ZoneFlex 7343 and 7363 have a more rounded coverage area and less horizontal range (when mounted horizontally) compared to the ZoneFlex 2942, 7942 and 7962 APs.

Figure 16. ZoneFlex 7343/7363 recommended ceiling mounting orientation



When wall mounted, ZoneFlex 7343 and 7363 should be staggered to maximize coverage.

Figure 17. ZoneFlex 7343/7363 recommended wall mounting orientation

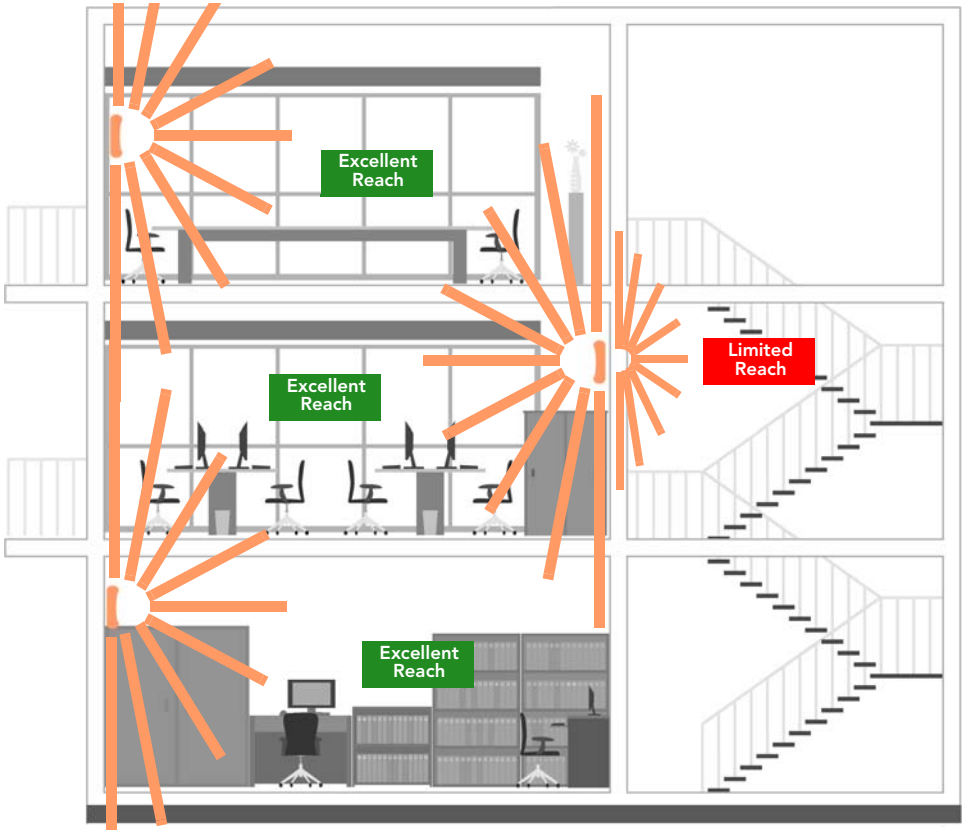
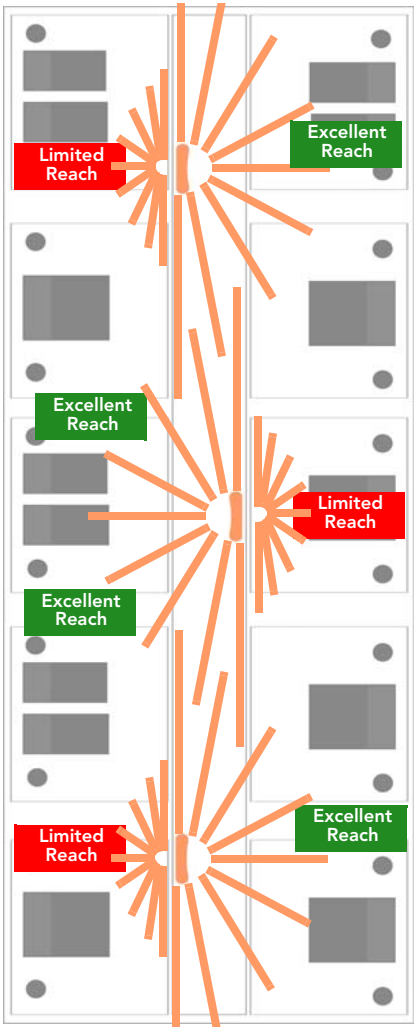


Figure 18. ZoneFlex 7343/7363 wall mounting in a corridor (top view)



Step 1: Preconfigure the Access Point

The procedure for completing the Access Point's essential configuration depends on whether you want it to be managed by either ZoneDirector or FlexMaster or to operate as a standalone access point. Refer to the section that is relevant to your deployment:

- Configuring for Management by ZoneDirector
- Configuring for Standalone Operation or for Management by FlexMaster

Configuring for Management by ZoneDirector

If ZoneDirector is installed on the network, you can configure the Access Point for management by ZoneDirector. Simply connect the Access Point to same Layer 2 subnet as ZoneDirector. When the Access Point starts up, it will discover and register with ZoneDirector automatically.

NOTE: In addition to using Layer 2 auto discovery to enable the Access Point to register with ZoneDirector, you can also use DHCP Option 43 or DNS. For more information, refer to the *ZoneDirector User Guide*.

CAUTION: If you use this method, make sure that you do not change the IP address of ZoneDirector after the AP discovers and registers with it. If you change the ZoneDirector IP address, the AP will no longer be able to communicate with it and will be unable to rediscover it.

CAUTION: If you configure an AP for management by ZoneDirector and later decide that you want it to be a standalone AP, you will need to factory reset the AP.

Before starting this procedure, check the label on the back panel of the Access Point, and write down the MAC address of the Access Point. You will need the MAC address to identify the Access Point on the ZoneDirector Web interface.

What You Will Need

Before starting with the configuration task, make sure that you have the following requirements ready:

- A computer from which you can access the ZoneDirector Web interface
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer
- One Ethernet cable
- Your *ZoneFlex Access Point* and the supplied power adapter

1. Connect the Access Point to a Power Source

1. Connect the power jack to the power connector on the rear panel of your ZoneFlex Access Point.
2. Connect the power adapter to a power source.
3. Verify that the power LED on the Access Point is green.

You have completed connecting the Access Point to a power source.

2. Connect the Access Point to the Same Subnet as ZoneDirector

1. Connect one end of an Ethernet cable to a LAN (RJ-45) port on the rear panel of the Access Point.
2. Connect the other end of the Ethernet cable to the same Layer 2 subnet as ZoneDirector. The same Layer 2 subnet means that there should not be any router between the Access Point and ZoneDirector.
3. Log into the ZoneDirector Web interface, and then go to the **Monitor** > **Access Points** page.
4. Look for the MAC address of the Access Point, and then check its **Status** column.
   - If automatic approval is enabled, the Status column should show **Connected**.
   - If automatic approval is disabled, click the **Allow** link that is on the same row as the Access Point's MAC address. This allows the Access Point to register with ZoneDirector.

When the Status column shows **Connected**, this indicates that the Access Point has successfully registered with ZoneDirector and that it can now be moved to its destination Layer 2 or Layer 3 network.

3. Disconnect the Access Point from the Power Source

1. Disconnect the Access Point from the power source.
2. Verify that the power LED on the rear panel of the Access Point is off.
3. Continue to "Step 2: Verify Access Point Operation" on page 41.

Configuring for Standalone Operation or for Management by FlexMaster

This section describes the steps you need to complete to set up the AP in standalone mode or to be managed by Ruckus Wireless FlexMaster, if you have one installed on the network.

What You Will Need

Before starting with the configuration task, make sure that you have the following requirements ready:

- An administrative computer (notebook computer) running Microsoft Windows (2000/XP/Vista/7)
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer
- One Cat5e foil screened twisted pair (FTP) solid Ethernet cable

1. Prepare the Administrative Computer

NOTE: The following procedure is applicable if the administrative computer is running Windows XP or Windows 2000. If you are using a different operating system, refer to the documentation that was shipped with your operating system for information on how to modify the computer's IP address settings.

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
   - On Windows XP, click **Start** > **Control Panel** > **Network Connections.**
   - On Windows 2000, click **Start** > **Settings** > **Network Connections**.
2. When the Network Connections window appears, right-click the icon for Local Area Connection, and then click **Properties**.

NOTE: Make sure that you configure the Local Area Connection properties, not the Wireless Network Connection properties.

3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog box appears.
4. Write down all of the currently active network settings. You will need this information later when you restore your computer to its current network configuration.
5. Click **Use the following IP address**, and then configure the IP address settings with the values listed in Table 15. For a sample configuration, refer to Figure 19.

Table 15. Configure your computer's IP address settings

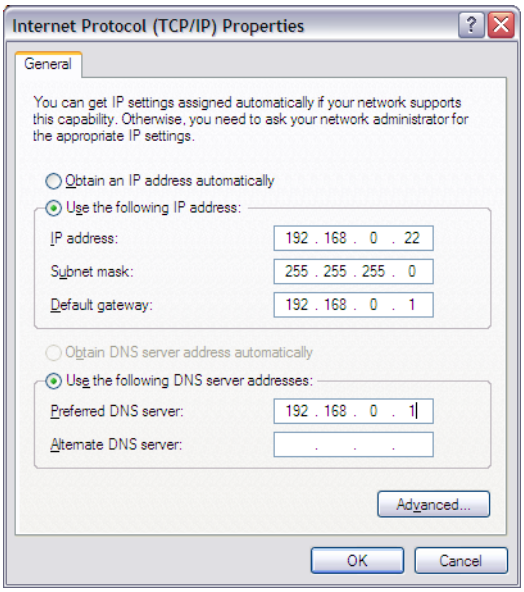
IP address	`192.168.0.22` (or any address in the 192.168.0.x network—with the exception of `192.168.0.1`, which is the default IP address assigned to the Access Point)
Subnet mask	`255.255.255.0`
Default gateway	`192.168.0.1`
Preferred DNS server	`192.168.0.1`

You can leave the **Alternate DNS server** box blank.

6. Click **OK** to save your changes and close the TCP/IP Properties dialog box.
7. Click **OK** again to close the Local Area Connection Properties dialog box.

Windows saves the IP address settings that you have configured.

Figure 19. Sample configuration in the Internet Protocol (TCP/IP) Properties dialog box


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 22
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 0 . 1
Alternate DNS server:
Advanced...
OK
Cancel

2. Connect the Access Point to the Administrative Computer

1. Connect one end of an Ethernet cable to an Ethernet port on the Access Point, and then connect the other end to the administrative computer's Ethernet port.
2. Take out the supplied power adapter from the AP package, connect the power jack to the AC connector on the rear panel of the AP, and then plug in the adapter to a power source. After a minute, the power LED on the AP turns solid green.

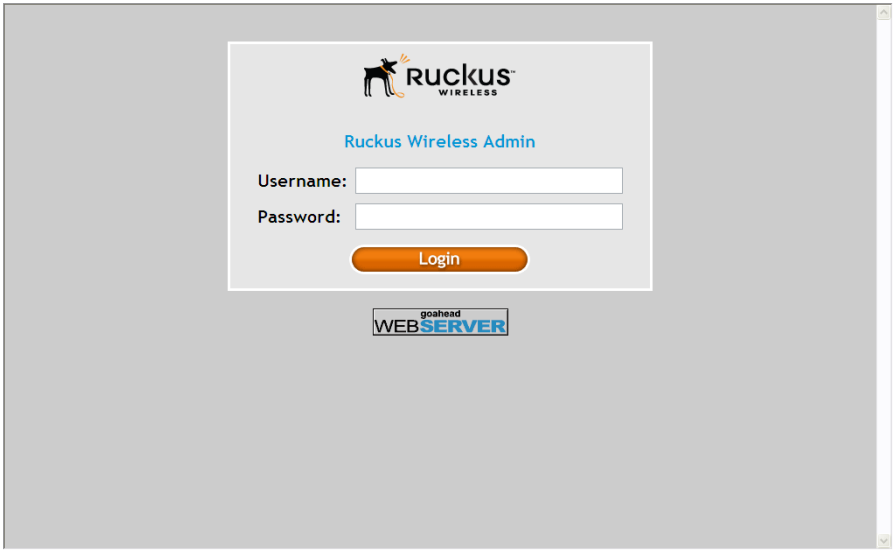
You have completed connecting the AP to the administrative computer.

3. Log Into the Access Point's Web Interface

1. On the administrative computer, open a Web browser window.
2. In the address or location bar, type the following address:

   `https://192.168.0.1`
3. Press `<Enter>` on the keyboard to connect to the Access Point's Web interface. A security alert message appears.
4. Click **Yes** or **OK** (depending on the browser) to continue. The Access Point's login page appears.

Figure 20. The ZoneFlex Access Point login page



5. In **User name**, type `super`.
6. In **Password**, type `sp-admin`.
7. Click **Log In**. The Web interface appears, displaying the Device page.
8. Continue to "4. Configure the Wireless Settings" below.

4. Configure the Wireless Settings

To complete this step, you will need to configure the settings on the **Common** tab and at least one **Wireless #** tab. These are the essential wireless settings that will enable wireless devices on the network to associate with the Access Point.

For your reference, the default wireless settings on the Access Point are listed in Table 16.

Table 16. Default wireless settings

Setting	Default Value
SSID (network name)	Wireless 1 to Wireless 8 (8 WLANs)
Encryption (security)	Disabled on all WLANs
Default management IP address	`192.168.0.1`

Configure Common Wireless Settings

1. On the left menu of the Web interface, click **Configuration** > **Wireless**. The Common page appears.

NOTE: For dual band APs (ZoneFlex 7962/7762/7363), the two radios (2.4GHz and 5GHz) need to be configured separately on the Web interface. To configure the common wireless settings, click **Configuration** > **Radio 2.4G** or **Radio 5G**. The rest of the configuration procedures are the same as the other models.

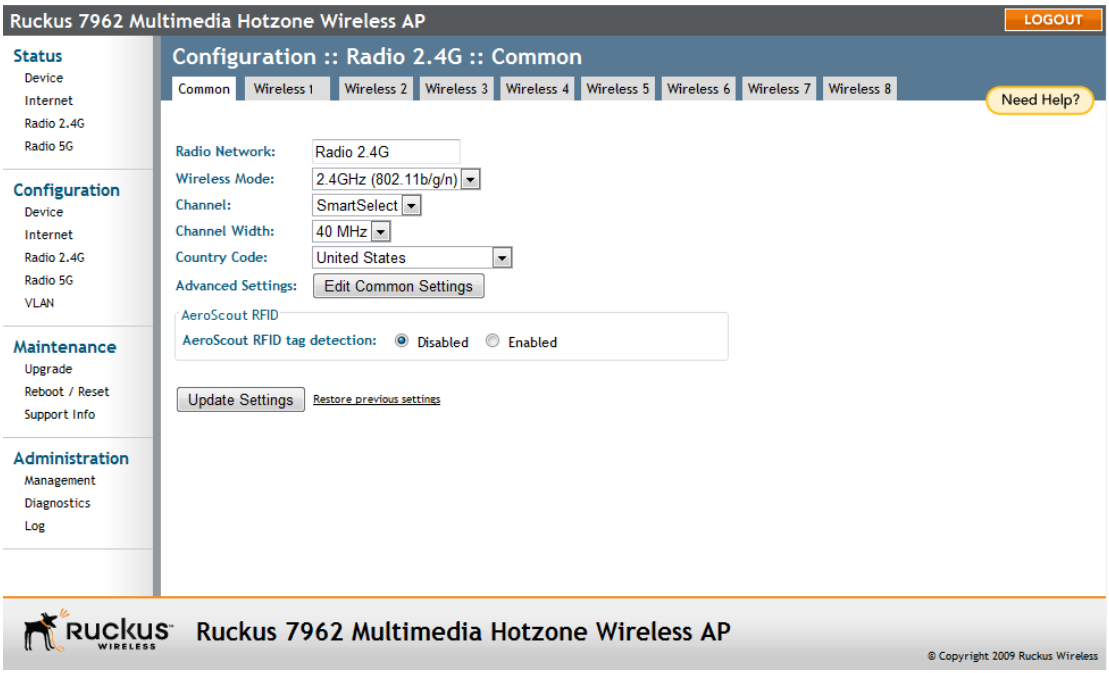
2. Verify that the common wireless settings are configured as listed in Table 17.

Table 17. Common wireless configuration

Setting	Recommended Value
Wireless Mode	Auto-select
Channel	SmartSelect
Country Code	• If you purchased the Access Point in the United States, this value is fixed to **United States** at the factory and is not user configurable. • If you purchased the Access Point outside the United States, verify that the value is set to your country or region. Selecting the correct country code ensures that the Access Point uses only the radio channels allowed in your country or region. *Note for dual band AP users: The two radios on dual band APs are always configured with the same country code setting. If you change the country code for Radio 1, for example, the same change will be applied automatically to Radio 2.*

3. If you made any changes to the **Common** tab, click **Update Settings**.
4. Continue to "Configure Wireless # Settings" below.

Figure 21. The Configuration > Wireless > Common tab



Configure Wireless # Settings

1. Click one of the **Wireless #** tabs.
2. In **Wireless Availability**, click **Enabled**.
3. In **Broadcast SSID**, click **Enabled**.
4. Clear the **SSID** box, and then type a unique and descriptive name that you want to call this wireless network.

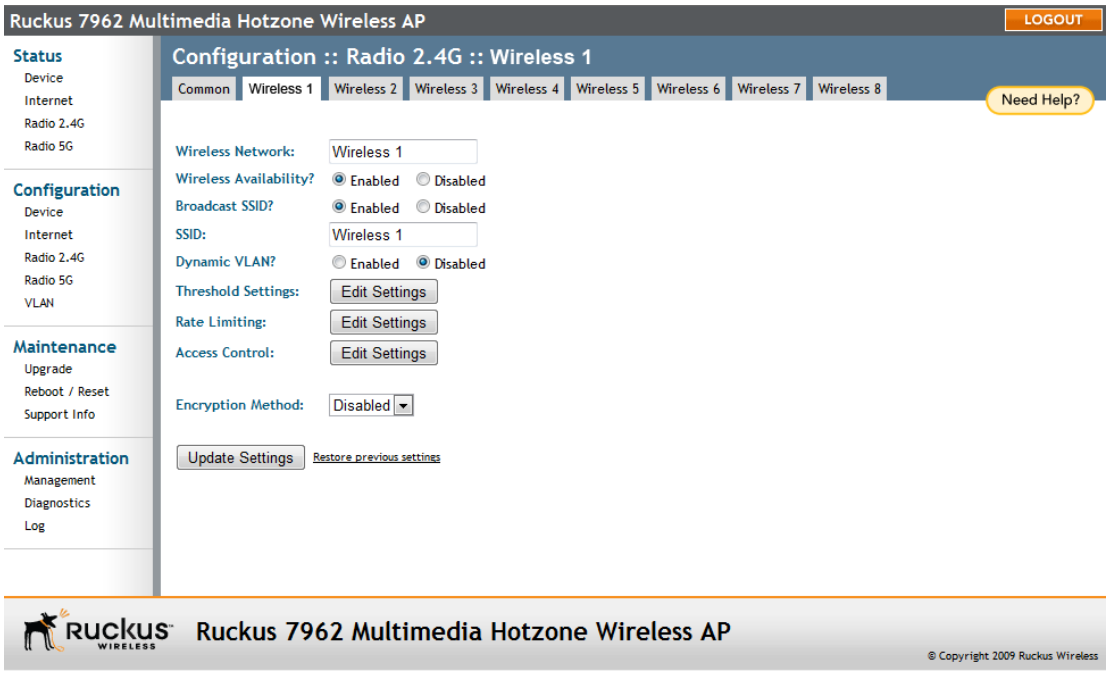
   For example, you can type `Ruckus Wireless AP`. This SSID is the name that will help users identify this wireless network in their wireless network connection application.

NOTE: You may also configure other wireless settings on this and other **Wireless #** tabs (in addition to the settings described above), although it is not necessary for completing the Access Point installation.

5. Click **Update Settings**.

You have completed configuring the basic wireless settings of the Access Point.

Figure 22. The Configuration > Wireless > Wireless 1 tab



(Optional) Set the FlexMaster Server Address

If you have a FlexMaster server installed on the network and you intend to use FlexMaster to manage the Access Point, you can set the FlexMaster server address at this point. Before starting this procedure, make sure you obtain the correct FlexMaster server URL.

NOTE: In addition to setting the FlexMaster server URL manually on the Access Point, you can also use DHCP Option 43 or DNS to point the Access Point to the FlexMaster server. For more information, refer to the *FlexMaster User Guide*.

1. On the menu, click **Administration** > **Management**.
2. Scroll down the page to the **TR069 / SNMP Management Choice** section.
3. Verify that the **Auto** option is selected.
4. In **FlexMaster Server URL**, type the URL of the FlexMaster server on the network. You can use either `http` or `https` to connect to the URL and include either the host name or IP address of the FlexMaster server in the URL. The following are examples of valid FlexMaster server URLs:

   `http://flexmaster/intune/server`

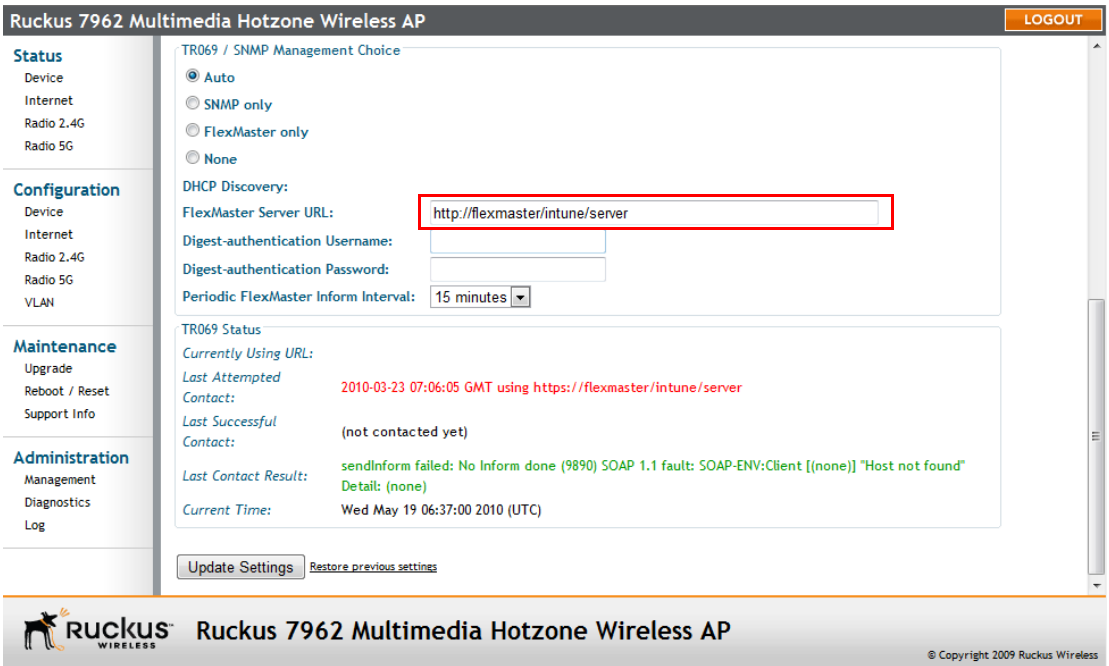
   `https://flexmaster/intune/server`

```
http://192.168.20.1/intune/server
https://192.168.20.1/intune/server
```

5. Click **Update Settings** to save your changes.

You have completed setting the FlexMaster server address on the Access Point.

Figure 23. Type the FlexMaster server URL



NOTE: Instructions on how to verify that the Access Point and FlexMaster can communicate with each other are provided in "Check the TR069 Status (FlexMaster Management Only)" on page 43.

5. Disconnect the Access Point from the Administrative Computer

1. Disconnect the Access Point from the power source.
2. Verify that the power LED on the Access Point is off.
3. Disconnect the Ethernet cable from the administrative computer's Ethernet port.

6. Restore the Administrative Computer's Network Settings

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
   - On Windows XP, click **Start** > **Control Panel** > **Network Connections.**
   - On Windows 2000, click **Start** > **Settings** > **Network Connections**.
2. When the Network Connections window appears, right-click the icon for **Local Area Connection**, and then click **Properties**.
3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **TCP/IP Properties** dialog box appears.
4. Restore the computer's network settings by typing the original IP address settings in the **TCP/IP Properties** dialog box.
5. On the **TCP/IP Properties** dialog box, click **OK** to close it.
6. Click **OK** again to close the **Local Area Connection Properties** dialog box.

You are now ready to connect the Access Point to your network.

Step 2: Verify Access Point Operation

Before deploying the Access Point to your environment, Ruckus Wireless strongly recommends that you verify that the Access Point is operating correctly. To do this, you will need to connect the Access Point to your live network temporarily and make sure that the network connection works and that wireless clients are able to associate with the Access Point and connect to your network and the Internet.

NOTE: The network and power connections that you will be making in this step are temporary. For outdoor access points, you can perform these verification tasks indoors.

Connect the Access Point to the Network

1. Connect the Ethernet cable from a LAN (RJ-45) port on the Access Point to your network's router or switch.
2. Reconnect the Access Point to a power source.

You have completed connecting the Access Point to your live network. Perform the tasks described in the following sections to verify that the Access Point is operating normally.

Check the LEDs

Perform a spot-check using the LEDs to verify that the Access Point is operating normally. Refer to the following sections for information on how to check the LEDs on each ZoneFlex AP model.

ZoneFlex 2741/2942/7343/7942

If the Access Point is operating normally and your wireless client was able to associate with it:

- The **WLAN** LED is green.
- If you do not have Ruckus Wireless ZoneDirector on the network, the **DIR** LED is off. This indicates that the Access Point is operating in standalone mode. If there is a ZoneDirector device on the network, the **DIR** LED is green.

ZoneFlex 7363 and 7962

If the Access Point is operating normally and your wireless client was able to associate with it:

- The **2.4G** or **5G** LED is green.
- If you do not have Ruckus Wireless ZoneDirector on the network, the **DIR** LED is off. This indicates that the Access Point is operating in standalone mode. If there is a ZoneDirector device on the network, the **DIR** LED is green.

ZoneFlex 7762

If the Access Point is operating normally and no wireless clients are associated with it:

- The **Power** LED is green.
- The **Status** LED shows slow blinking amber. This indicates that there are no wireless clients connected to the Access Point's WLAN service.

Associate a Wireless Client with the Access Point

1. On the administrative computer, verify that the wireless interface is enabled. On Windows XP, click **All Programs** > **Connect To** > **Wireless Network Connection** to enable the wireless interface.
2. In the system tray, right-click the (Wireless Network Connection) icon, and then click **View Available Wireless Networks**.
3. In the list of available wireless networks, click the network with the same SSID as you configured in "Configure Wireless # Settings" on page 38. For example, if you set the SSID to `Ruckus Wireless AP`, click the wireless network named **Ruckus Wireless AP**.
4. Click **Connect**.

Your wireless client connects to the wireless network. After the wireless client connects to the wireless network successfully, the wireless client icon in the system tray changes to .

Check the TR069 Status (FlexMaster Management Only)

If you configured the Access Point to report to a FlexMaster server on the network, make sure you verify that it can successfully communicate with the FlexMaster server. You can do this by checking the TR069 status on the Access Point's Web interface.

1. Log in to the Access Point's Web interface.
2. Go to the **Administration** > **Management** page.
3. Scroll down to the **TR069 Status** section.
4. Check the value for **Last successful contact**. If it shows a date in green, this indicates that the Access Point was able to successfully communicate with FlexMaster.

Disconnect the Access Point from the Network

1. Disconnect the Access Point from the power source.
2. Disconnect the Ethernet cable that runs to the Access Point's RJ45 port from your network's router or switch.

You are now ready to deploy the Access Point to its permanent mounting location.

Step 3: Deploy the Access Point

In this step, you will place the Access Point in a suitable location on the network and connect it to a power source and to your network environment.

1. Choose a Location for the Access Point

You can install the Access Point on a flat surface (for example, on a desktop or tabletop) or mount it on a wall or ceiling. When choosing a location for the Access Point, ensure that the location:

- Allows easy viewing of the LEDs and access to the connectors, if necessary.
- Is centrally located to the wireless clients that will be connecting to the Access Point. A suitable location might be on top of a cabinet or similar furniture to optimize wireless connections to clients in both horizontal and vertical directions, allowing wider coverage.

When positioning your Access Point, ensure that:

- It is out of direct sunlight and away from sources of heat.
- Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.
- There are no thick walls or metal shielding between the Access Point and the wireless stations.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted.

Review the recommendations in "Determine the Optimal Mounting Location and Orientation" on page 27 for help in choosing a suitable location for the Access Point.

2. Connect the Access Point to a Power Source and the Network

Once you have placed the Access Point at its installation location, you are ready to connect it to a power source and the network.

NOTE: If your ZoneFlex model supports PoE, you can also supply power to the AP from a PoE switch or injector. For information on how to make the PoE connections, refer to the documentation that was shipped with the PoE switch or injector.

CAUTION: If you will be using PoE, you must use a Cat-5e or better Ethernet cable for the PoE connection.

1. Connect the power jack to the power connector on the rear panel of your ZoneFlex Access Point.

2. Connect the power adapter to a power source.
3. Obtain an Ethernet cable that is long enough to connect the Access Point to your network's router, switch, or hub.
4. Connect one end to a LAN port on the AP, and then connect the other end to your network's router, switch, or hub.
5. Verify that the power LED on the Access Point is green.

Congratulations! You have completed setting up the Access Point on your network. To learn how to configure and manage the Access Point, continue reading the next chapters.

Troubleshooting Installation

If the startup sequence does not work, verify that the network name (SSID) and security settings (if you enabled them) on the AP match the settings on your wireless device.

- Disconnect the AP from the power source, wait 5 seconds, reconnect it, and then wait 60 seconds before attempting a reconnection.
- Disconnect and reconnect the AP and the PC.
- Replace the Ethernet cable with a new one if the relevant LAN port LED is not illuminated. (LEDs in each port light up during a successful connection.)

If all else fails, you can reset the AP to the factory defaults (and start over).

1. Insert a straightened-out paper clip into the reset button hole.
2. Press and hold the **Reset** button for at least eight (8) seconds.

You can now reconnect your computer directly to the AP (as described in "2. Connect the Access Point to the Administrative Computer" on page 35), and then start over with installation, using the default network settings.

3

Navigating the Web Interface

In This Chapter

Logging Into the ZoneFlex Web Interface 47
Navigating the Web Interface 48

Logging Into the ZoneFlex Web Interface

If you need to manage your AP, you do it with the features of the ZoneFlex Web interface (which you already used to set up the AP for use).

If your ZoneFlex network will be managed by a Ruckus Wireless ZoneDirector, you can manage APs through ZoneDirector rather than logging into each AP's Web interface individually.

NOTE: The following procedure assumes that you know the static IP address of the AP (now in use), or you have some means of determining the dynamic IP address in use by the AP. The PC you use for AP administration should be on the management VLAN.

To log into the Web interface

1. On the PC, open a Web browser window.
2. In the address or location bar, type the IP address of the AP. Be sure to enter it in the format:

   `https://<ip_address>`
3. Press <Enter> to connect to the Web interface.
4. If a Windows security alert dialog box appears, click **OK**/**Yes** to proceed. The Ruckus Wireless Admin login page appears.
5. In **Username**, type `super`.
6. In **Password**, type `sp-admin`.
7. Click **Login**.

The ZoneFlex Access Point Web interface appears.

Navigating the Web Interface

You manage the Access Point through a Web browser-based interface that you can access from any networked computer. Table 18 lists the Web interface features that are identified in Figure 24.

Figure 24. Elements of the ZoneFlex AP Web Interface

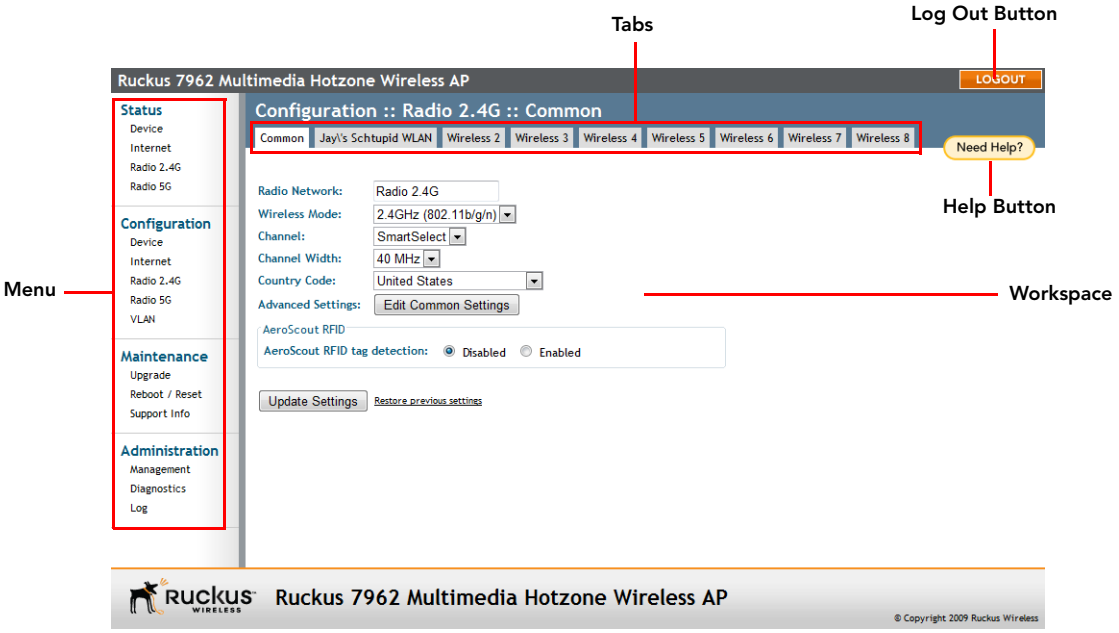


Table 18. ZoneFlex AP Web interface elements

Element	Description
Menu	Under each category (Status, Configuration, etc.) are options that, when clicked, open the related workspace in the area to the right.
Tabs	Contains additional options for the configuration page. For example, the **Configuration** > **Wireless** page includes one tab for common wireless configuration and eight tabs for each of the available WLANs.
Workspace	This large area displays features, options and indicators relevant to your menu bar choices.
Logout Button	Click this button to log out of the AP.

Table 18. ZoneFlex AP Web interface elements

Element	Description
Help Button	Click this button to open a help window with information related specifically to the options currently displayed in the workspace.

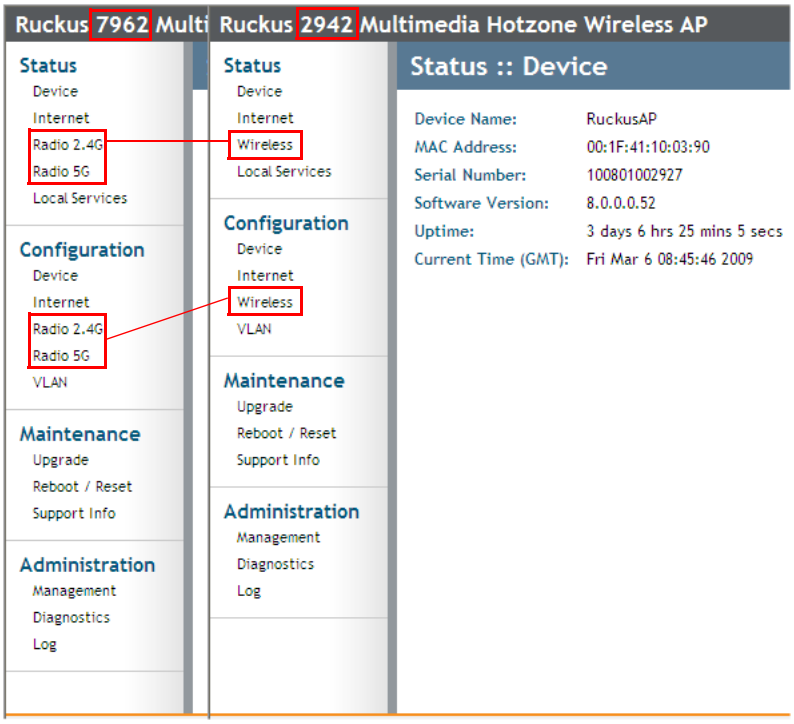
If You Are Using a Dual Band ZoneFlex Access Point

If your ZoneFlex AP model is 7363/7762/7962, note that elements on the Web interface menu are slightly different from the other ZoneFlex AP models.

Dual band ZoneFlex APs have one 2.4GHz radio (for 802.11b/g/n clients) and one 5GHz radio (for 802.11a/n clients). The wireless settings for these two radios need to be configured separately, which is why the dual band AP Web interface has the **Radio 2.4G** and **Radio 5G** menu items, instead of a single **Wireless** menu item in other models.

Figure 25 highlights the differences between the ZoneFlex 7962 and ZoneFlex 2942 menus.

Figure 25. Menu items are slightly different in dual band APs (left) and other ZoneFlex AP models (right)



4

Configuring the Access Point

In This Chapter

Configuring the Device Settings 51
Configuring the Network Settings 54
Configuring Common Wireless Settings 57
Configuring WLAN Settings 63
Rate Limiting 71
Controlling Access to the Wireless Network 72
Configuring VLAN Settings 75

This chapter provides instructions for configuring ZoneFlex access points in a stand-alone environment. If you will be managing your ZoneFlex network using ZoneDirector, refer to the ZoneDirector User Manual, available in PDF format from the Ruckus website, at http://support.ruckuswireless.com/documents.

Configuring the Device Settings

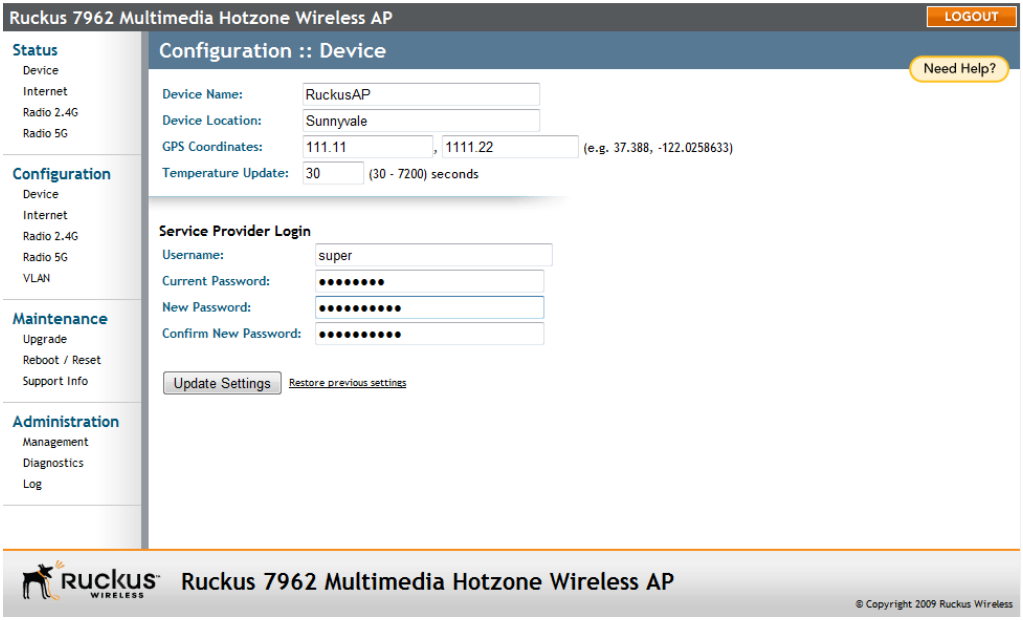
Device settings refer to the device name, temperature update, and service provider login settings. (Temperature update is only available on certain ZoneFlex models.)

To configure the system settings

1. Go to **Configuration** > **Device**. The Configuration :: Device page appears.
2. In **Device Name**, type a new name for the device or leave as is to accept the default device name (`RuckusAP`). The device name identifies the AP among other devices on the network.
3. In **Device Location**, type the address or location where the device is deployed.
4. In **GPS Coordinates**, type the latitudinal and longitudinal coordinates of the device location.
5. In **Temperature Update**, specify how often you want the AP to update its temperature information on the **Status** > **Device** page. The default update interval is 30 seconds.

6. Under **Service Provider Login**, change the login information as required:
   - **Username**: Type the name that you want to use for logging into the Web interface. The default user name is `super`.
   - **Current Password**: Type the current administrative password. The default administrative password is `sp-admin`.
   - **New Password**: Type the new password that you want to use. The password must consist of six to 32 alphanumeric characters only.
   - **Confirm Password**: Retype the new password to confirm.
7. Click **Update Settings** to save and apply your changes.

Figure 26. The Configuration > Device page



Enabling the PoE OUT Port for ZoneFlex 7762 Outdoor AP

If you are using the supplied Ruckus Wireless PoE injector for 7762 AP (and power adapter) to supply power to the AP, you can use the **PoE OUT** port to supply PoE to any 802.3af PoE-capable device (for example, another ZoneFlex 7762 AP or an IP-based surveillance camera). The PoE feature for the PoE OUT port needs to be enabled from the Web interface.

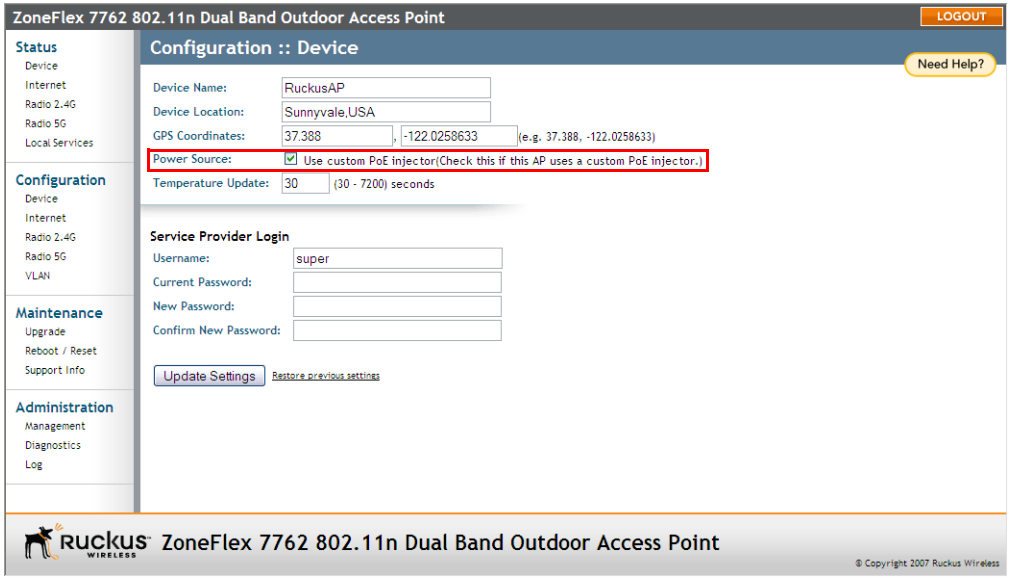
NOTE: If you use DC power or a PoE injector other than the one supplied with the AP, the AP will be operational but some features (such as the built-in heater and PoE for the **PoE OUT** port) will be unavailable. See Table 19 below for more information.

To enable PoE for the PoE OUT port

1. On the menu, click **Configuration** > **Device**.
2. In **Power Source**, select the **Use custom PoE injector** check box.
3. Click **Update Settings** to save your changes.

You have completed enabling PoE for the **PoE OUT** port.

Figure 27. Select the Use custom PoE injector check box



In addition to the supplied Ruckus Wireless PoE injector for the ZoneFlex 7762 AP, you can also use DC power or a standard 802.3af/802.3at PoE injector to supply power to the AP. Note, however, that some features (specifically, the built-in heater and PoE for the PoE OUT port) will be unavailable if the supplied PoE injector is not used. Refer to Table 19 for the available power options and the limitations associated with each option.

Table 19. Power configuration options

Power Input	Operational AP	Heater	PoE for PoE OUT
12V DC	Yes	No	No
802.3af input	Yes	No	No
802.3at input	Yes	Yes	No
Ruckus Wireless PoE injector for ZoneFlex 7762 AP (with supplied power adapter)	Yes	Yes	Yes

NOTE: If the built-in heater is disabled, the lowest operating temperature that the Access Point can support is -20° C.

Configuring the Network Settings

This section describes how to view and configure the AP's network settings. Topics discussed include:

- Default IP Addressing Behavior
- Obtaining and Assigning an IP Address
- Configuring the L2TP Settings

Default IP Addressing Behavior

By default, the AP is configured to automatically obtain an IP address from a DHCP server on the network. If the AP does not detect a DHCP server, it automatically assigns itself the static IP address `192.168.0.1` to make it easier for you to preconfigure and deploy it on your network.

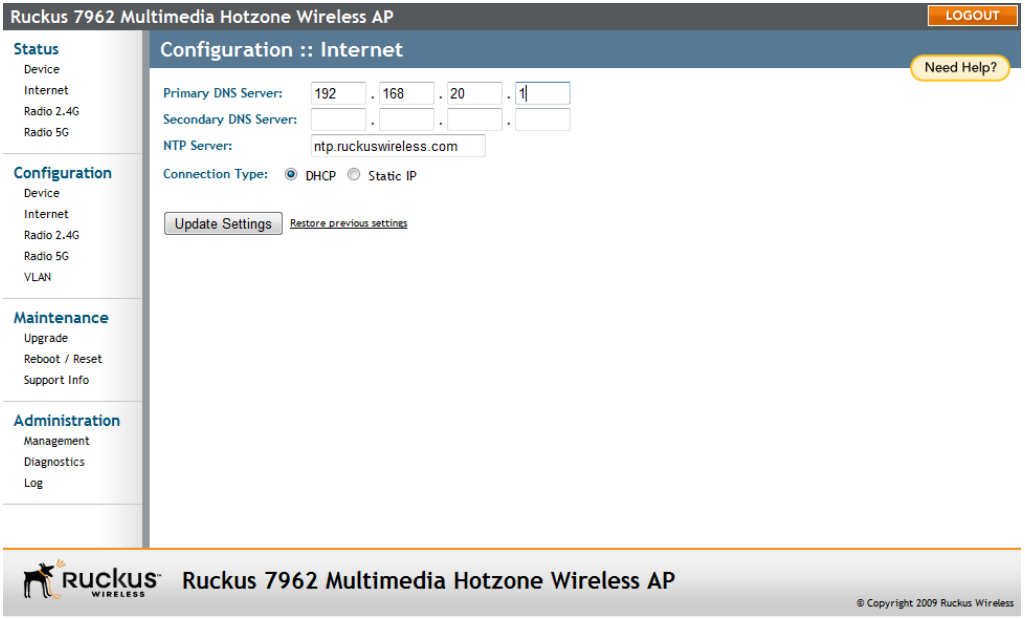
Obtaining and Assigning an IP Address

There are at least two instances when you would change the IP address of the AP:

- If the current AP IP address consistently conflicts with that of any other device in your network
- If you want to switch to a static IP address from DHCP, for use in managing or maintaining the AP

Unless you are able to determine the IP address assigned by the DHCP server to the AP, it may prove helpful for anyone needing administrative access to assign a static IP address to the AP.

Figure 28. The Configuration > Internet page



To review and modify the network configuration

1. Go to **Configuration** > **Internet**. The Internet page appears.
2. For **Connection Type**, select **Static IP**.
3. When the Static IP options appear, you can make changes to the following settings:
   - **Gateway**: This is the gateway IP address of the Internet interface.
   - **Primary DNS Server**: The IP address of the primary Domain Name System (DNS) server.
   - **Secondary DNS Server**: The IP address of the secondary Domain Name System (DNS) server.
   - **NTP Server**: Hostname of the Network Time Protocol (NTP) server.
4. Click **Update Settings** to save your changes.

NOTE: For information on L2TP settings, refer to "Configuring the L2TP Settings" on page 55.

Configuring the L2TP Settings

This feature is available on 802.11g models only.

You can implement transparent bridging with ZoneFlex through the use of L2TP (Layer 2 Tunnelling Protocol) tunnelling. By tunnelling traffic from a ZoneFlex AP to a centralized data center, access controllers with policy enforcement software can apply rules and services. In a typical WLAN implementation, these rules include a captive portal to authenticate users' credentials.

In the case of L2TP, the ZoneFlex AP functions as a remote bridge. As such, it forwards traffic into PPP sessions over the L2TP tunnel. This implementation ensures that you have complete visibility into MAC addresses of users, as individual Wi-Fi clients are essentially placed (bridged) onto the ISP's core network.

To configure L2TP tunnelling

1. Go to **Configuration** > **Internet**.
2. Under **L2TP Connection**, click **Enable**.
3. In **L2TP Network Server IP Address**, type the IP address of the L2TP network server (LNS) to which the device will connect.
4. In **Server Secret**, type the L2TP tunnel password.
5. If your network requires PPP authentication, configure the following fields under L2TP/PPP Authentication:
   - **Username**: Type your appropriate PPP user name.
   - **Password**: Type the password appropriate to the account.
   - **Password Confirmation**: Re-enter the password.
6. Click **Update Settings** to save your settings.

As ZoneFlex devices support multiple wireless networks (SSIDs), you should define which SSID should be tunneled and which should be locally bridged. You can configure this on the VLAN page. For more information, refer to "Configuring VLAN Settings" on page 75.

Configuring Common Wireless Settings

Common wireless settings are settings that are applied to all WLANs. The settings include the wireless mode, wireless channel, and country code.

To configure the wireless settings common to all WLANs

1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Make changes to the common wireless settings listed in the table below.

Table 20. Common Wireless settings

Setting	Description
Radio Network	(Dual radio APs only) Allows you to change the name of the 2.4GHz and 5GHz radios (default: "Radio 2.4G" and "Radio 5G").
Wireless Mode	**On 802.11b/g APs:** The wireless mode options include the following: • *Auto-Select*: Allows both 802.11g- and 802.11b-compliant devices to connect to the network. This is the default setting. • *2.4GHz 54 Mbps (For faster 802.11g devices only)*: Allows only 802.11g-compliant devices to join the network. • *2.4GHz 11Mbps (For slower 802.11b devices only)*: Allows only 802.11b-compliant devices to join the network. **On dual radio 802.11n APs:** On dual radio 802.11n APs, the wireless mode is determined by radio; i.e., for the 2.4GHz radio, the mode is set to 2.4GHz (802.11b/g/n), while for the 5GHz radio, the mode is set to 5GHz (802.11a/n).
Channel	This option lets you select the channel used by the network. You can choose **SmartSelect**, or choose one of a specific number of channels. If you choose **SmartSelect**, the AP automatically selects the best channel (encountering the least interference) to transmit the signal.

Table 20. Common Wireless settings

Channel Width (11n APs only)	On 802.11n Access Points, the option to choose 40MHz channel width provides (theoretically) double the data capacity of the channel. However, wider channel width means fewer channels available, and more interference with other wireless signals.
Country Code	This option (if enabled) lets you select your country or region code.
Advanced Settings	Refer to "Reviewing the Advanced > Common Options" on page 59.
External Antenna	*NOTE: This option only appears if you are using the ZoneFlex 2942 AP.* The ZoneFlex 2942 AP provides an external antenna port, in case you want to attach an external antenna to extend the range of your wireless network. To enable the AP to use the external antenna, select the **Enabled** option in this section. This option is disabled by default.

CAUTION: Selecting the incorrect country or region may result in violation of applicable laws. If you purchased the AP in the United States, you do not need to manually set the country code. Ruckus Wireless APs that are sold in the US are preconfigured with the correct country code and this setting cannot be changed.

3. If you are using AeroScout Tags in your organization to locate assets or personnel, you can use your ZoneFlex AP to relay location or presence data from the AeroScout Tags to the AeroScout Engine via Wi-Fi.

   To enable the AP to relay AeroScout data, click the **Enable** option in **AeroScout RFID tag detection**.

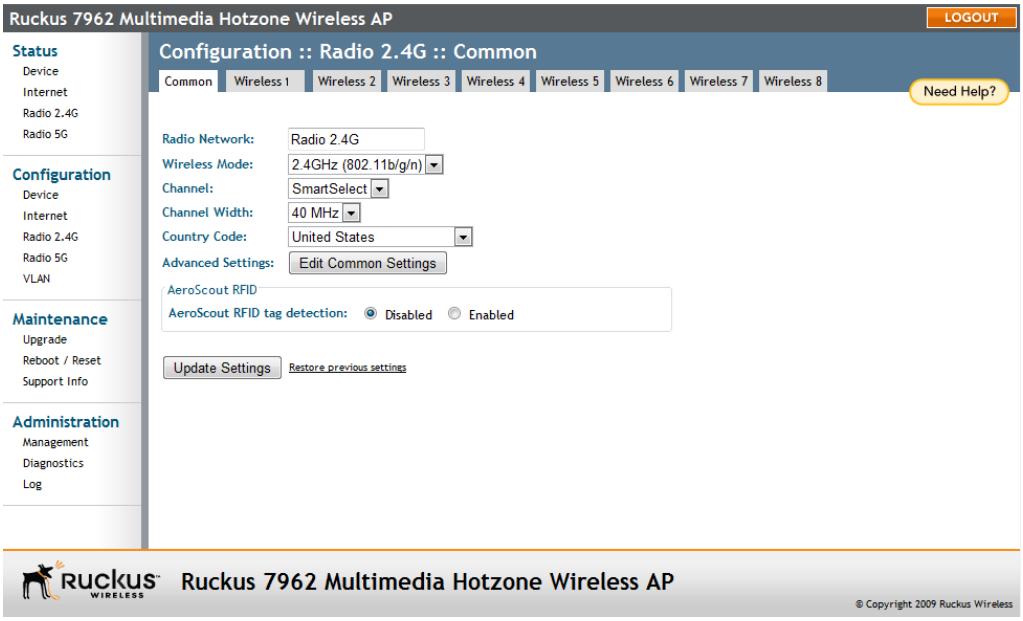
   To check the status of the AeroScout communication agent (which relays location data from AeroScout Tags to the AeroScout Engine), go to the **Status** > **Wireless** page. Refer to "Viewing Current Device Settings" on page 79 for more information.

NOTE: For other AeroScout-related configuration, refer to the AeroScout documentation that was shipped with your AeroScout Tag and AeroScout Engine.

NOTE: If ZoneDirector exists on the network, you can enable AeroScout RFID tag detection on all its managed APs at once. Refer to the ZoneDirector online help for more information.

4. Click **Update Settings** to save your settings.

Figure 29. The Configuration > Wireless page



Reviewing the Advanced > Common Options

This page permits access to advanced wireless functions. These settings should only be changed by an experienced administrator. Incorrect settings can severely impact wireless performance. It is recommended that the default settings be retained for best performance.

CAUTION: To fully benefit from the AP's capabilities, it is advisable not to change these settings unless absolutely necessary.

To configure the advanced common options

1. On the **Configuration** > **Wireless** page, click **Edit Common Settings**. The Configuration :: Wireless :: Advanced :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

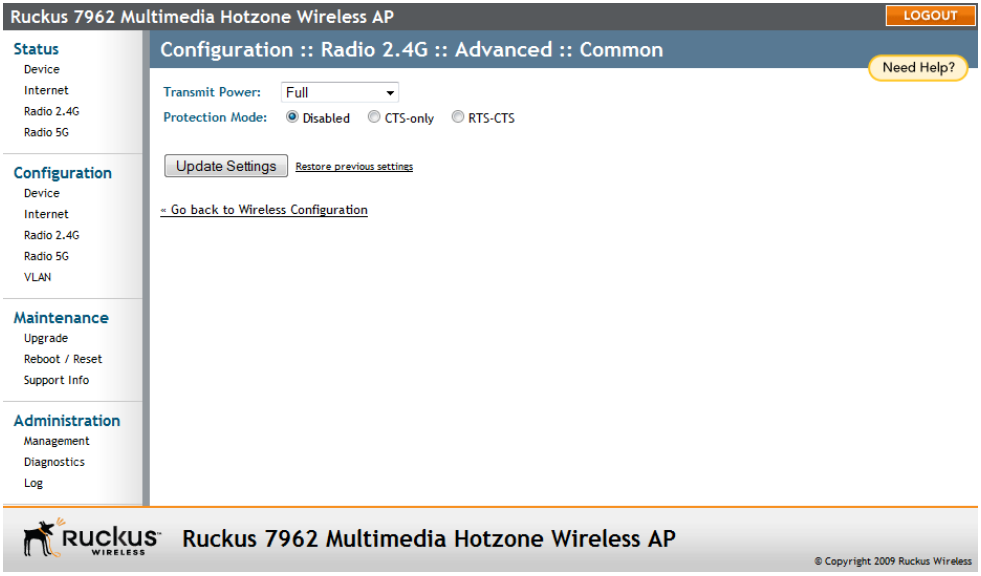
2. Configure the advanced settings listed in Table 21 as required.

Table 21. Advanced > Common options

Option	Description
Transmit Power	The default setting is **Full**. Select the level of transmit power from the drop-down menu. This option sets the maximum transmit power level relative to the predefined power (this value differs according to the current country code).
Protection Mode	(Inactive by default.) If you activate protection, you control how 802.11 devices know when they should communicate with another device. This is important in a mixed environment of both 802.11b and 802.11g clients. *WARNING: Activating this option (and configuring the settings) boosts the interoperability of 802.11b and 802.11g devices but will severely decrease performance.* • **CTS-only**: Choose this option to force all destination devices to acknowledge their ability to receive data when a transmission is initiated. Use this option for compliance with the Wi-Fi Alliance certification. • **RTS/CTS**: Choose this option to force both sending and receiving devices to confirm a data exchange on both ends before proceeding. For information on "Protection Mode", including specific threshold options and how they can be customized on an individual WLAN basis, see "Setting Threshold Options" on page 61.

3. Click **Update Settings** to save and apply the changes.

Figure 30. The Configuration :: Wireless :: Advanced :: Common page



Setting Threshold Options

The following options allow you to fine-tune the "Protection Mode" behavior, set previously on the **Configuration > Wireless > Advanced** > **Common** page. After activating a Protection Mode, you can open each Wireless tab and customize the threshold settings, which determine what is put in effect and when.

CAUTION: Do not customize these options unless you are an experienced network administrator or are under the guidance of an IT/support professional.

To customize Protection Mode (Threshold) settings

1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click the tab for the Wireless # (WLAN) that you want to configure. The Configuration :: Wireless :: Wireless [#] page appears.
3. Look for **Threshold Settings**, and then click **Edit Settings**. The Configuration :: Wireless :: Advanced :: Wireless [#] page appears.

4. Review the options listed in Table 22, and then make any needed changes.

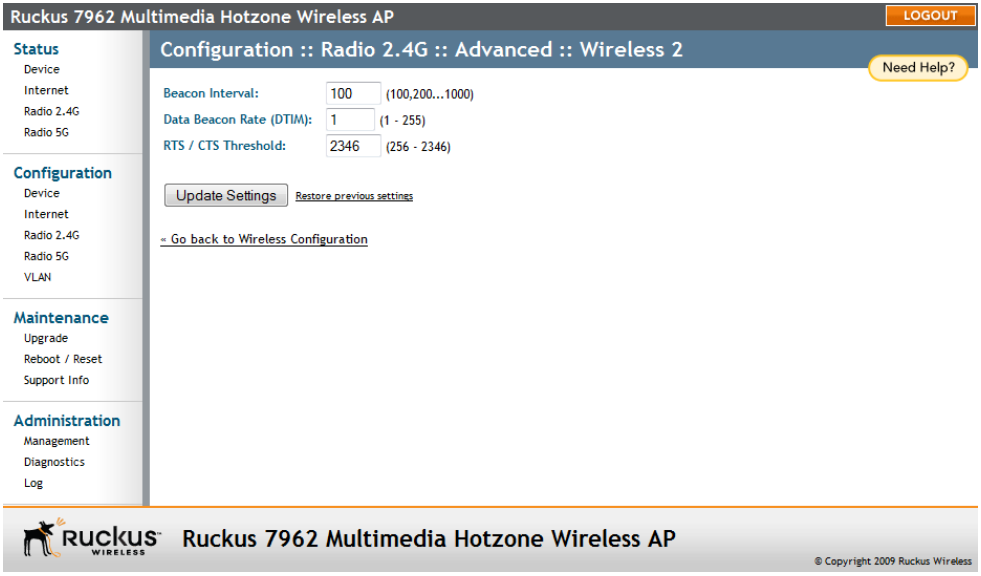
Table 22. Threshold options

Option	Description
Beacon Interval	(The default value is 100.) This value indicates the frequency interval of the beacon in milliseconds. A beacon is a broadcast packet sent by the AP to synchronize the wireless network.
Data Beacon Rate	(The default value is 10.) This value indicates the interval of the Delivery Traffic Indication Message (DTIM). This is a countdown field that the device uses to inform its clients of the next window for listening to broadcast or multicast messages.
RTS/CTS Threshold	(The default value is 2346.) This option determines at what packet length the RTS/CTS function is triggered. A lower threshold may be necessary in an environment with excessive signal noise or hidden nodes, but may result in some performance degradation.

5. Click **Update Settings** to save and apply the changes. A confirmation message appears at the top of the page.

You have completed configuring the threshold options. To reopen the previous page, click the **Go back to Wireless Configuration** link.

Figure 31. Threshold settings



Configuring WLAN Settings

This section describes how to configure WLAN-specific settings, such as wireless availability, SSID, encryption, and authentication.

To configure WLAN settings

1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click one of the eight **Wireless (#)** tabs. The Configuration :: Wireless :: Wireless (#) page appears. You can configure up to 8 SSIDs per radio (16 on dual radio APs).

3. Review the WLAN options listed in Table 23, and then make changes as required.

Table 23. Wireless # options

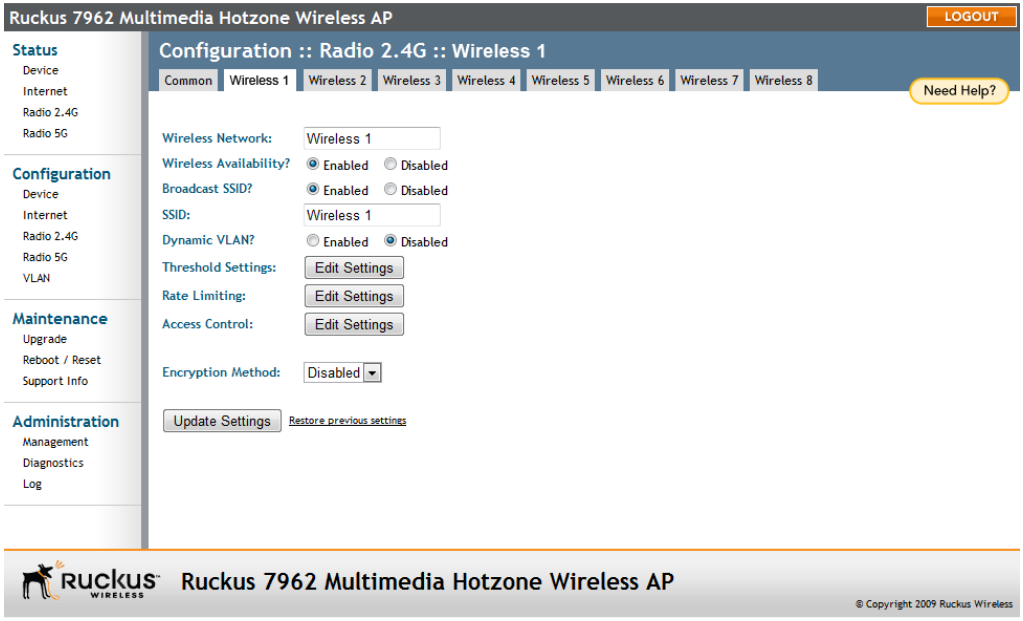
Option	Description
Wireless Network	Enter a name for the WLAN. This name is only displayed in the Web interface. You can use the same name as the SSID or a different name.
Wireless Availability	This option controls whether or not the wireless network is available to users (Off or On).
Broadcast SSID	This option controls whether or not the WLAN SSID is visible to anyone looking for wireless networks. Disabling (hiding) the SSID requires that the user be told the correct SSID before they can connect to your network.
SSID	This is the publicly-broadcast "name" of your wireless network. A default SSID is present (which you ideally replaced in the installation process). If the default SSID is still active, it is strongly recommended that you change it. The SSID identifies the WLAN in the user's wireless connection software. The SSID can be up to 32 characters in length, contain letters and numbers, and is case-sensitive.
Dynamic VLAN	Dynamic VLAN can be used to assign VLAN IDs to wireless clients based on RADIUS attributes, when a RADIUS authentication server is used. Enable this feature to allow RADIUS to designate VLAN IDs for each wireless client. For information on configuring the AP for RADIUS authentication, see "Customizing 802.1X Settings" on page 70.
Threshold Settings	This button opens a page where you can configure the Protection Mode you activated on the Configuration :: Wireless :: Advanced :: Common page. If Protection Mode is not active, ignore this option. For more information, see "Setting Threshold Options" on page 61.

Table 23. Wireless # options

Rate Limiting	This button opens a page where you can configure upload and download limits per station. For more information, see "Rate Limiting" on page 71.
Access Control	This button opens a page where you can configure access controls for the WLAN. For more information, see "Controlling Access to the Wireless Network" on page 72.
Encryption Method	By default, all data exchanges on your wireless network are not encrypted, but you can pick an encryption method in this option, and use the extra workspace features that appear to fine-tune the encryption settings. Ruckus Wireless strongly recommends using WPA encryption, as WEP has been proven to be easily circumvented. For more information, see either "Using WEP" on page 66 or "Using WPA" on page 68.

4. When you are finished, click **Update Settings** to save and apply the changes. A confirmation message appears at the top of this page.
5. Click **Go back to Wireless Configuration** to reopen the previous page.

Figure 32. WLAN settings



Using WEP

CAUTION: WEP encryption has been proven to be easily circumvented. Therefore, Ruckus Wireless recommends using WPA whenever possible, and only use WEP if your client devices do not support WPA.

To configure WLAN-specific WEP encryption settings

1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click the Wireless # tab that you want to configure. The Configuration :: Wireless :: Wireless[#] page appears.
3. Click the **Encryption Method** menu, and then click **WEP**. An additional set of WEP-specific encryption options appear on this page.

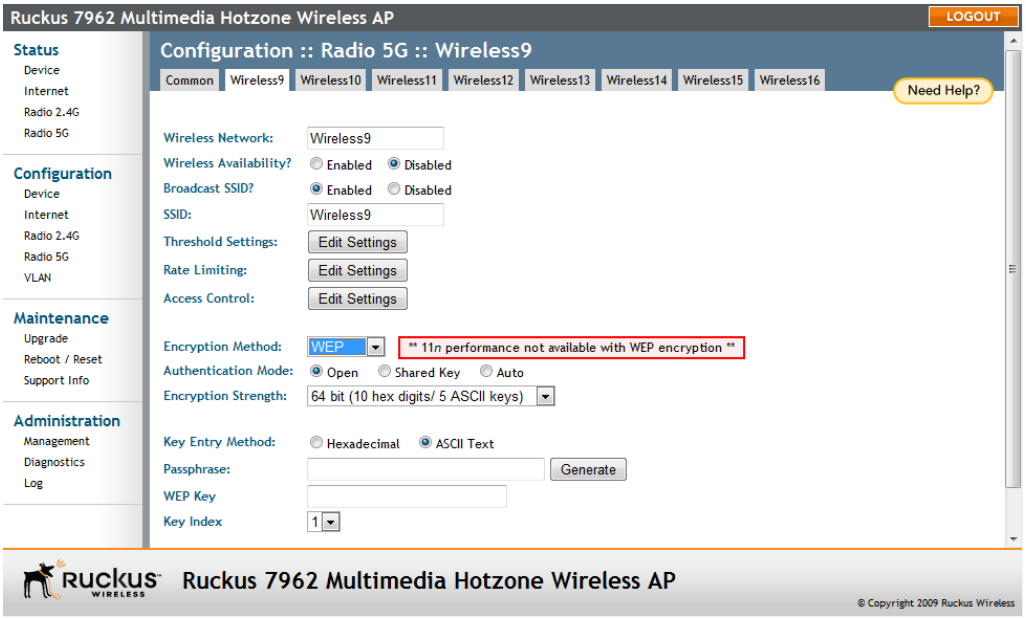
4. Review the encryption settings listed in Table 24, and then make changes as required.

Table 24. WEP settings

Encryption Setting	Description
Authentication Mode	Your options include: • Open: No security measure is enforced. • Shared Key: The selected Default Shared Key is used. • Auto: Automatically-selected authentication mode.
Encryption Strength	• 64 bit: Specify the key with 10 hexadecimal digits or 5 ASCII characters. • 128 bit: Specify the key with 26 hexadecimal digits or 13 ASCII characters. The 128-bit cryptography is stronger privacy protection for your network and is recommended if you use WEP.
Key Entry Method	• Hexadecimal: The encryption key only accepts hexadecimal characters (0-9, A-F). • ASCII Text: The encryption key accepts ASCII characters.
Passphrase	When using WEP, this passphrase can be used as a seed for automatic random key generation. Enter some text and click the **Generate** button. The system will generate the WEP key automatically. You may specify a passphrase up to 32 characters. Please note that the algorithm used for key generation may vary from system to system. Checking the WEP keys used between wireless stations and the AP is recommended.
WEP Key	Enter the key manually according to the Key Entry Method and Encryption Strength settings.
Key Index	Choose the index, from "1" to "4", that the WEP key is to be stored in.

5. Click **Update Settings** to save and apply the changes. A confirmation message appears at the top of the page.
6. Click **Go back to Wireless Configuration** to reopen the previous page.

Figure 33. WEP settings



Using WPA

Use of WPA (Wi-Fi Protected Access) or WPA2 provides enhanced security over WEP, and allows client authentication based on either a pre-shared key (PSK), for home or small office networks, or an external authentication server such as a RADIUS server, for corporate networks.

To configure WPA security settings

1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click the Wireless # tab that you want to configure. The Configuration :: Wireless :: Wireless[#] page appears.
3. Select **WPA** from the **Encryption Method** drop-down menu. An additional set of WPA-specific encryption options appears on the page.

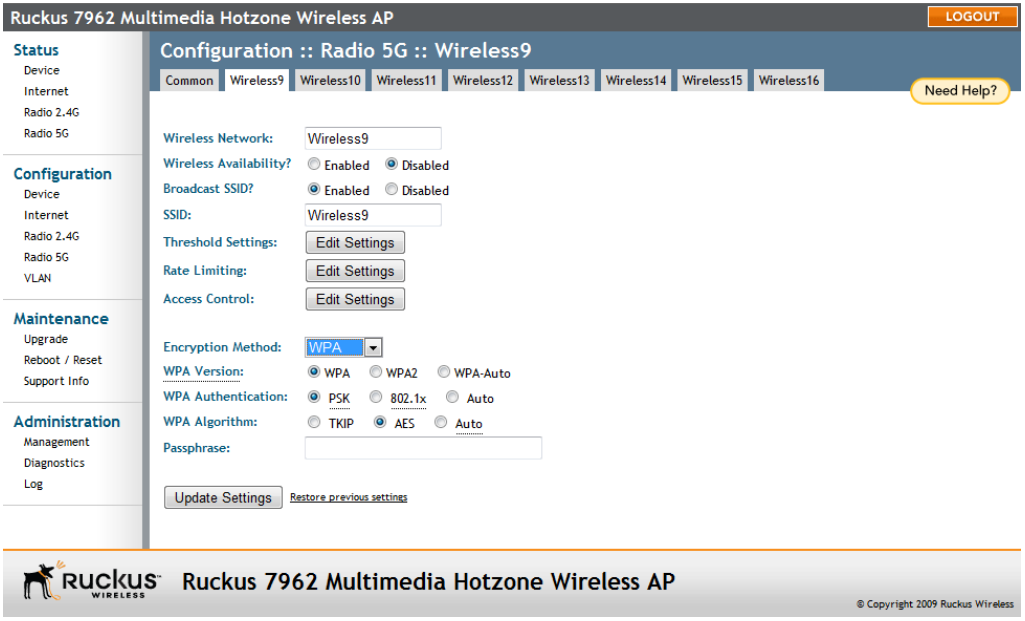
4. Review the encryption settings listed in Table 25, and then make changes as preferred.

Table 25. WPA settings

Encryption Setting	Description
WPA Version	Your options are WPA, WPA2 or WPA Auto. • **WPA** is the recommended default for best compatibility. WPA-capable PDAs and other devices are usually limited to WPA + TKIP. • **WPA2** is an advanced option that provides enhanced security, but may not be compatible with older wireless devices. WPA2 support on Windows XP requires a Microsoft patch and is only available on recent operating systems, including Windows XP Service Pack 2 and later. • **WPA-Auto** allows the client to decide whether to use WPA or WPA2 based on the client's capabilities.
WPA Authentication	• **PSK** mode is suitable for home or small office networks. • **802.1X** mode uses a RADIUS server to verify user identity. • **Auto** mode allows the client to authenticate based on either a passphrase or its RADIUS credentials.
WPA Algorithm	• **TKIP**: This algorithm provides greater compatibility with older client devices, but is not supported by the 802.11n standard. Therefore, if you select TKIP encryption, 11n devices will be limited to 11g transfer rates. • **AES**: This algorithm provides enhanced security over TKIP, and is the only encryption algorithm supported by the 802.11i standard. • **Auto:** Automatically selects TKIP or AES based on the client's capabilities.
Passphrase	Enter a new passphrase between 8 and 32 characters long, using any combination of printable characters (letters, numbers, hyphens and underscores).

5. Click **Update Settings** to save and apply the changes. A confirmation message appears at the top of the page.
6. Click **Go back to Wireless Configuration** to reopen the previous page.

Figure 34. WPA settings



Customizing 802.1X Settings

If you choose "WPA" as the encryption method, you have the option to set up the AP to act as an 802.1X proxy, utilizing external authentication sources such as a RADIUS server. This provides a higher level of security, when compared to the static security process in a WEP configuration.

To configure WLAN-specific 802.1X authentication settings

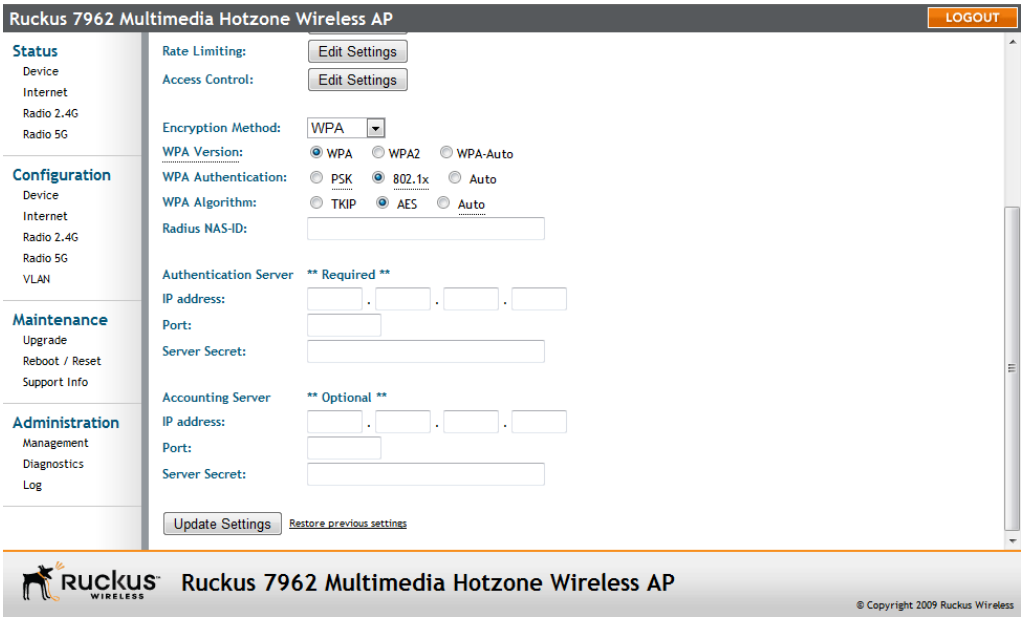
1. Go to **Configuration** > **Wireless**. The Configuration :: Wireless :: Common page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click a **Wireless #** tab to configure. The Configuration :: Wireless :: Wireless[#] page appears.
3. Select **WPA** from the **Encryption Method** drop-down menu. The basic set of WPA-specific encryption options appear on the page.

4. Select **802.1X** as the WPA Authentication mode. Additional options appear.
5. Configure the following settings to customize your 802.1X authentication.
   - **RADIUS NAS-ID**: Enter the network ID assigned to your RADIUS server.
   - **Authentication Server [-Required-]**: Enter the information needed to establish a connection between the AP and the RADIUS server. The default port for RADIUS authentication is 1812.
   - **Accounting Server [-Optional-]**: Enter the information needed to establish this connection. The default port for RADIUS accounting is 1813.
6. Click **Update Settings** to save and apply the changes. A confirmation message appears at the top of this page.
7. Click **Go back to Wireless Configuration** to reopen the previous page.

Figure 35. 802.1X settings



Rate Limiting

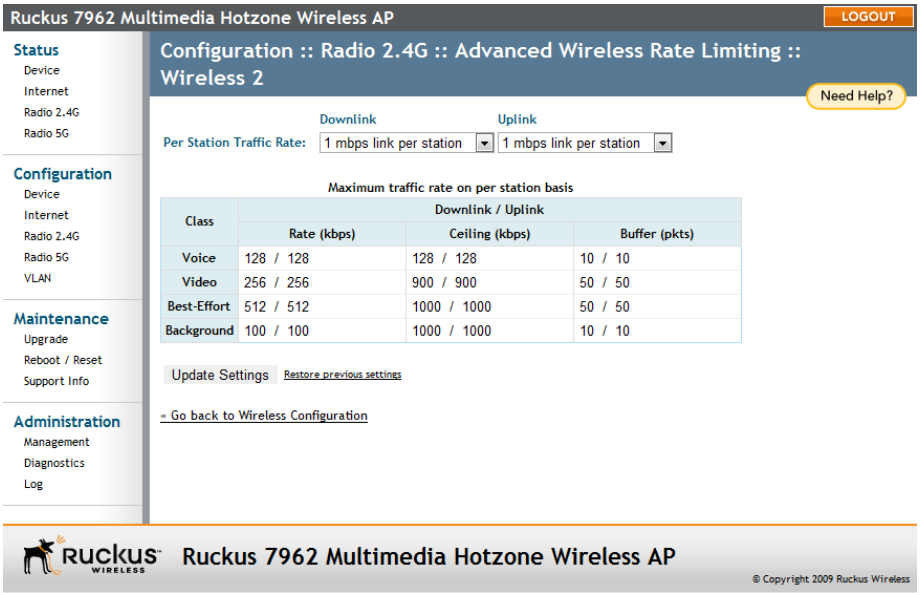
Rate Limiting allows you to cap the data transfer rates per client for a specific WLAN.

To enable per station rate limits

1. Go to **Configuration > Wireless** (**Configuration > 2.4G** or **Configuration 5G** on dual band APs).
2. Select the WLAN that you want to configure from the tabs at the top of the page.
3. Click the **Edit Settings** button next to *Rate Limiting*.

4. The *Rate Limiting* page appears.
5. Set the maximum **Downlink** and **Uplink** rate per station, or leave disabled if you do not want to limit traffic rate per station in that direction.
6. The table below updates to show the maximum transfer rates for each traffic type.
7. Click **Update Settings** to save your changes.

Figure 36. Limit traffic rate per station on a particular WLAN



Controlling Access to the Wireless Network

Access Controls give you control over which stations are allowed to join (associate with) your WLAN networks. There are "tab" entries for each available WLAN.

Changing the Access Controls for a WLAN

1. Go to **Configuration** > **Wireless**.

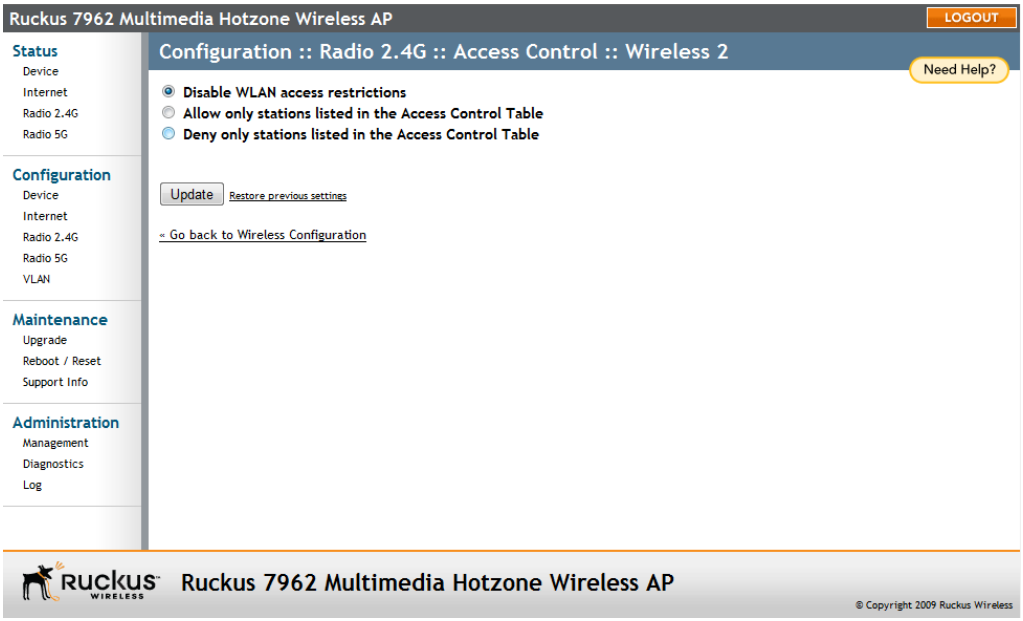
NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Configuration** > **Radio 2.4G** or **Configuration** > **Radio 5G**.

2. Click the **Wireless #** tab for which you want to configure the access control settings.
3. Click the **Edit Settings** button after **Access Control**. The Configuration :: Wireless :: Access Control :: Wireless # page appears.

4. Select the radio button for the desired access control. (For a description of the options, see"Access Control Options" on page 73.) The Access Controls Table appears.
5. Click **Add new entry** to add a MAC address to the table.
6. Type the MAC address in the spaces provided.
7. Click **Update** to save your changes. Assuming all parameters you entered are acceptable, that row will be added to the table.

You have completed adding an entry to the MAC address table. If you have additional MAC addresses you want included, click **Add new entry**, and then repeat these steps until you have entered all the stations you want. There is a limit of 128 rows.

Figure 37. Access control settings



Removing MAC Addresses from the List

Simply check the box under the **Remove** column for the MAC address entry you want to remove from the table, and then click **Update**. The page refreshes and the MAC address that you removed disappears from the list.

Access Control Options

This section describes the options that you can use to control access to the wireless network.

Disabling WLAN Access Restrictions

If you select **Disable WLAN access restrictions**, then MAC-address-based restrictions on which stations can join the WLAN are disabled; thus, any station can join. If the WLAN uses encryption, then the station must still supply the correct encryption pass-phrase. The Access Controls table is hidden if the current mode is **Disable WLAN access restrictions**.

Allowing Only Stations Explicitly Listed in the Access Controls Table

If you select **Allow only stations listed in the Access Controls Tabl**e, then stations entered into the access-controls table are allowed but all others are disallowed. To add MAC addresses, see "Changing the Access Controls for a WLAN" on page 72.

Denying Only Stations Explicitly Listed in the Access Controls Table

If you select **Deny only stations listed in the Access Controls Table**, then stations entered into the access-controls table are disallowed but all others are allowed. To add MAC addresses, see "Changing the Access Controls for a WLAN" on page 72.

Access Control Table Columns

The Access Control table contains the following columns:

Address

Six text boxes appear in which you enter the desired MAC address, in hexadecimal digit form, two characters in each box. You can specify a full 12-hex-digit MAC address or enter "wildcard" characters for "don't care" digits. Allowable hex-digit characters are 0-9, a-f, and A-F. Most address-tags and software where you find MAC addresses listed include colons or dashes to separate the address-pairs; that is provided for you on the web page, so do not enter the colons or dashes.

Supported wildcard characters include "x", "X" and blank (space character). Wild-cards are useful when you want to specify all MAC addresses from a given manufac-turer. For example, by specifying only the Organizationally Unique Identifier (the first six hexadecimal digits of any MAC address from that manufacturer is its OUI) saves you having to enter all 24 million of them (the table size is limited in the AP/Router to 128 entries). Some manufacturers produce devices using more than one OUI, in which case you may need to enter each applicable one.

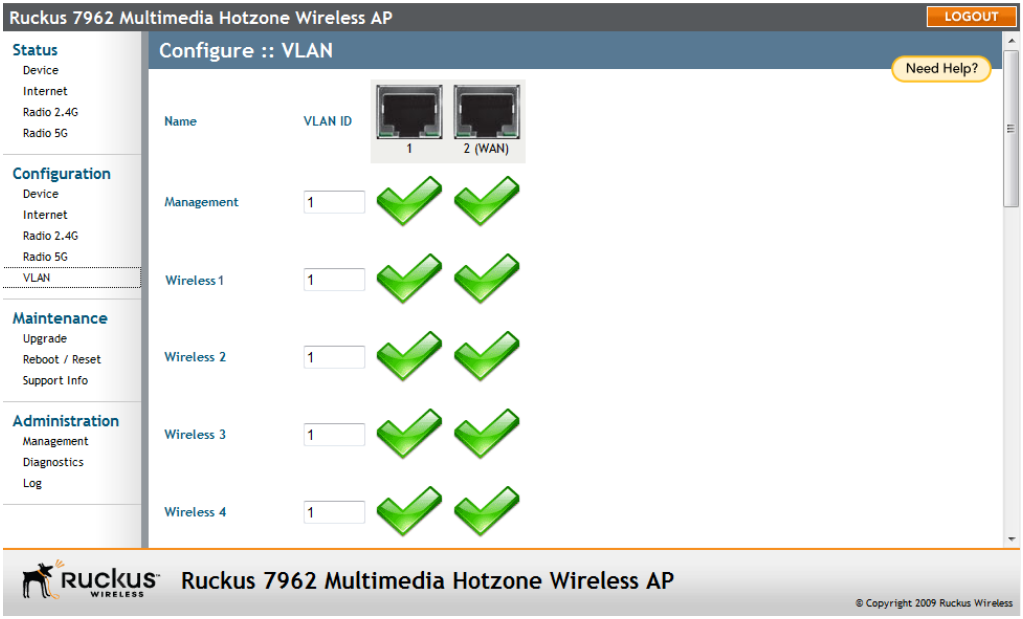
Remove

Check the **Remove** box for any rows that you no longer want used.

Configuring VLAN Settings

The VLAN page is used to configure the virtual LAN (VLAN) parameters of the AP. Traffic never uses VLAN tags over wireless links, but traffic originating on or destined for WLAN stations can be differentiated by a VLAN identifier as it travels over other links, such as Ethernet, DSL or Cable Internet, etc., thus given the appropriate segmentation as it traverses the LAN or the Internet.

Figure 38. The Admin > VLAN page



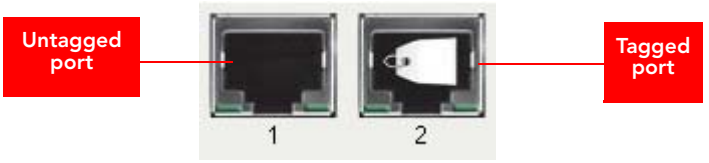
Navigating the VLAN Page

- **Name**: The name appearing in the first cell of each column identifies each "network." Here the term refers to a single broadcast domain. There is also a "Management" network, referring to communications directly to the AP/Router.
- **VLAN ID**: If the VLAN ID field is blank or empty, no VLAN tagging will occur for that network. The state is shown by one of three images, explained below in "VLAN port state icons."

NOTE: If two rows (two networks) are assigned the same VLAN ID, then they are considered to be the same network.

- **VLAN tagging**: Each RJ45 port can be configured to use VLAN tagging. By default, no RJ45 port is tagged. When the icon contains a white "tag," that port is tagged; otherwise it is un-tagged. Clicking on the icon switches between tagged and un-tagged modes.
- **RJ45 port state images**: The AP may be connected to the same or different Ethernet "uplinks" using the RJ45-type connectors on the back of the AP. The images of RJ45 connectors represent those RJ45 connectors on the AP. Each image includes the label of the RJ45 port which it represents. Clicking an icon switches between "tagged" and "un-tagged" modes. When the icon contains a white "tag," that port is tagged; otherwise it is un-tagged. If desired, wireless traffic can be segmented into different VLAN IDs, which you configure using this page.

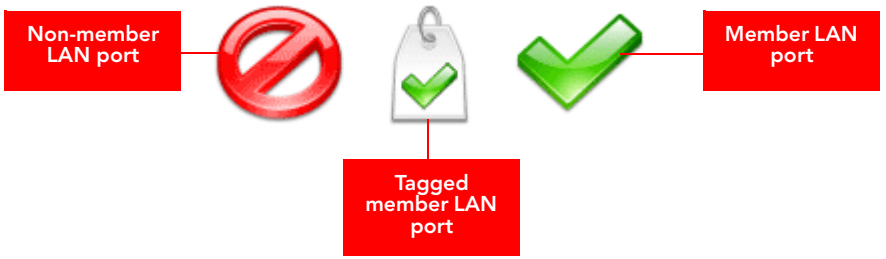
Figure 39. VLAN tagging



- **VLAN port state icons**: A "Member VLAN port**"** allows the network's traffic to flow through its associated RJ45 connector. If that port is configured for VLAN-tagging, then the "tagged member VLAN port" icon will be displayed. A "non-member VLAN port" does not allow network traffic to flow through the RJ45 connector.

  Clicking an icon toggles that VLAN port between "member" and "non-member" status. The port may automatically be marked as "tagged" where appropriate.

Figure 40. Port state icons



- **Show me an example**: Clicking the button labeled **Show me an example** opens a few sample configurations, with an explanation of what each shows.
- **Update Settings**: When you click **Update Settings**, if any configuration settings have changed, a connectivity test will be run. If the browser and the AP/Router can communicate using the new VLAN settings, then they will remain set. If

connectivity fails, the device will revert to the previous VLAN settings and a warning message will appear to tell you the test failed and the settings were reverted to their original values.

CAUTION: When changing VLAN settings, you must ensure that your management device (admin computer) is a member of the same VLAN that you configure.

5

Managing the Access Point

In This Chapter

Viewing Current Device Settings 79
Viewing Current Internet Connection Settings 79
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Viewing Associated Wireless Clients 82
Changing the Administrative Login Settings 83
Enabling Other Management Access Options 84
Working with Event Logs and Syslog Servers 89
Upgrading the Firmware 91
Rebooting the Access Point 93
Resetting the Access Point to Factory Defaults 94
Running Diagnostics 95

This chapter provides instructions for managing standalone ZoneFlex access points using the Web interface. For information on managing your ZoneFlex network using ZoneDirector, refer to the ZoneDirector User Guide, available from the Ruckus Wireless website.

Viewing Current Device Settings

The Status > Device page displays a general overview of the AP's current status, including device name, serial number, MAC address, current software version, etc.

Viewing Current Internet Connection Settings

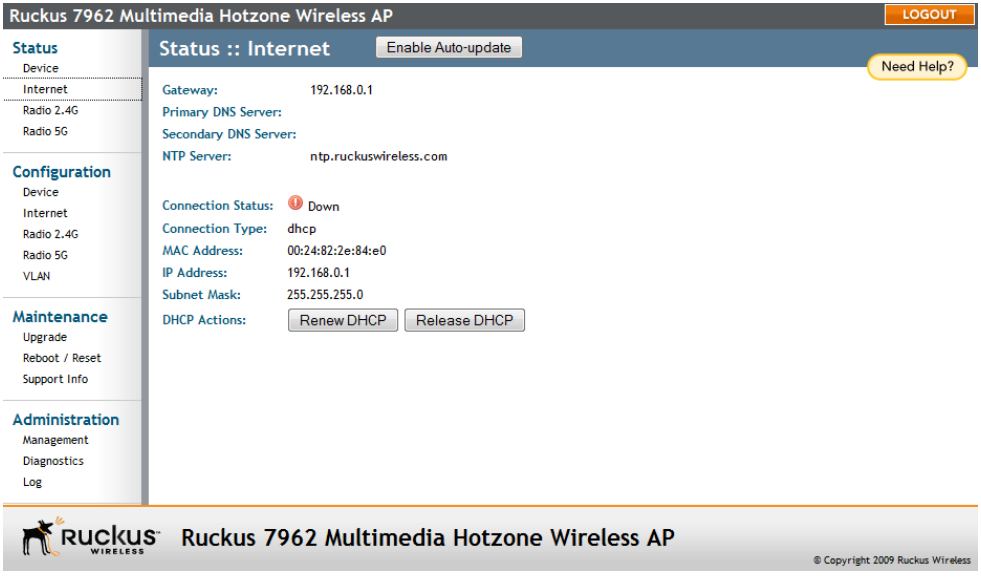
The Status > Internet page displays information on the AP's network settings; i.e., the settings that allow the AP to communicate with your local network and the Internet. Information includes IP address, gateway, DNS server, NTP server and connection type (method of obtaining an IP address -- DHCP or static IP).

Renewing or Releasing DHCP

This task should be performed only if you have access to the DHCP server or have some way to determine what IP address has been assigned to the AP. It serves as a troubleshooting technique when IP addresses to one or more networked devices prove to be unusable or in conflict with others, or when the AP loses its DHCP-assigned IP address for some reason.

1. Go to **Status** > **Internet**.
2. Review the current settings.
3. If the current **Connection Type** is **DHCP**, you will be able to see the currently-assigned IP address and subnet mask listed below.
4. If the IP address is 192.168.0.1, the AP is not receiving an IP address from the DHCP server.
   - To force the DHCP server to renew the IP address assigned to this AP, click **Renew DHCP**. If the AP is listed in the DHCP server's address table, it will attempt to reassign the previous address to the AP (unless the address is already in use).
   - To force the DHCP server to assign a new IP address, click **Release DHCP**, then **Renew DHCP**. Your changes take place immediately.

Figure 41. Renew or release DHCP



Viewing Current Wireless Settings

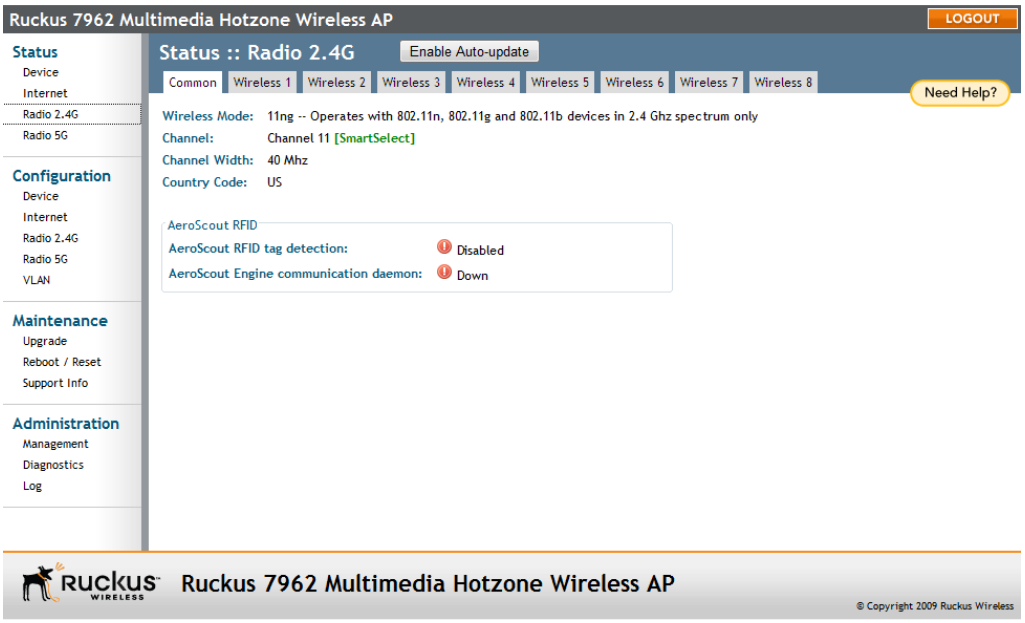
If you want to view the current common wireless settings that the AP is using, go to the **Status** > **Wireless** page (on dual band APs, go to **Status > 2.4G** or **Status > 5G**). Table 26 lists the descriptions of each common wireless setting.

Table 26. Common Wireless settings

Setting	Description
Wireless Mode	Shows the wireless mode that the AP is currently using. Possible values include: • Auto-Select • 2.4GHz 54 Mbps • 2.4GHz 11 Mbps • 11ng (Operates with 802.11n, 802.11g and 802.11b devices in 2.4 Ghz spectrum only)
Channel	Shows the wireless channel that the AP is currently using. If you set the wireless channel to SmartSelect, this field will show the value **Channel # [SmartSelect]**.
Channel Width	11n devices only. Displays whether the channel width is set to 20MHz or 40MHz.
Country Code	Shows the country code that the AP has been set to use. *CAUTION: Verify that the AP is using the correct country code to make sure it uses only the allowed radio channels in your region. Selecting the incorrect country code may result in violation of application laws.*
AeroScout RFID tag detection	Shows **Enabled** if you enabled AeroScout RFID tag detection. The default setting is **Disabled**.
AeroScout Engine communication daemon	Shows **Up** if the communication agent on the AP is able to relay location data from AeroScout Tags to the AeroScout Engine. If the communication agent is unable to relay data or AeroScout tag detection is disabled, this field will show **Down**.

If you want to make changes to any of these settings, go to the **Configuration** > **Wireless** page. Refer to "Configuring Common Wireless Settings" on page 57 for more information.

Figure 42. The Status > Wireless page



Viewing Associated Wireless Clients

A usage-monitoring capability has been built into the Access Point to help you monitor wireless clients that are associated with your wireless network.

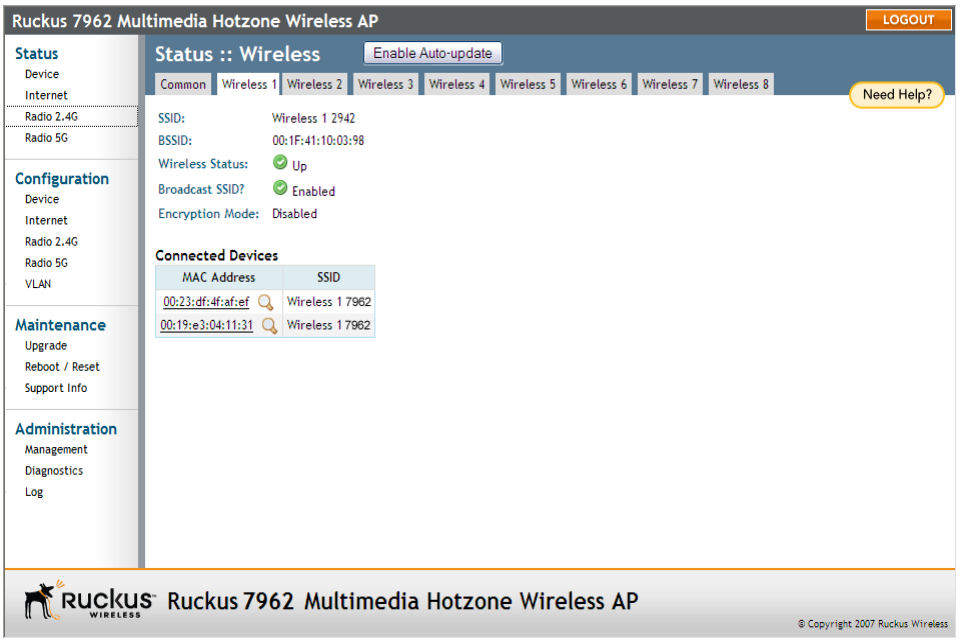
To view associated wireless clients

1. Go to **Status** > **Wireless**. The Status :: Wireless page appears.

NOTE: If you are using a ZoneFlex 7363/7762/7962 AP, go to **Status** > **Radio 2.4G** or **Status** > **Radio 5G.**

2. Click any of the **Wireless** tabs. Wireless clients that are associated with this particular wireless network appear under **Connected Devices**.

Figure 43. The Status > Wireless page



Changing the Administrative Login Settings

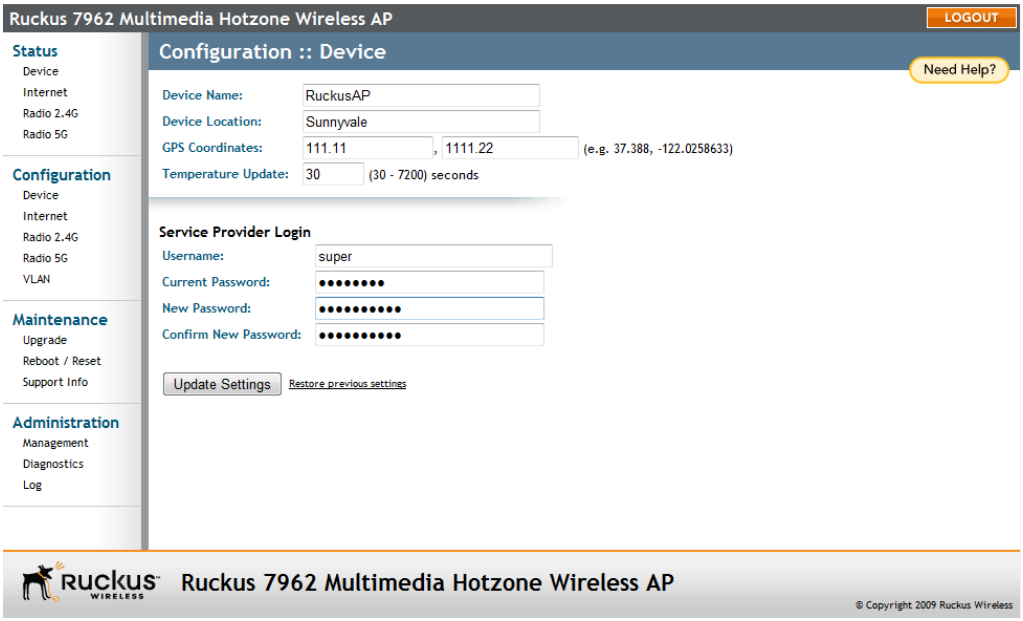
The default user name is `super` and the default password is `sp-admin`. To prevent unauthorized users from logging in to the Web interface using these default administrator login settings, Ruckus Wireless recommends that you change the default Web interface password immediately after your first login.

To change the default administrator login settings

1. Log into the Web interface.
2. Go to **Configuration** > **Device**. The Device page appears.
3. Under **Service Provider Login**, change the default administrator login settings.
   - In **Username**, type a new user name that you will use to log in to the Web interface. The default user name is `super`.
   - In **Password**, type a new password to replace the default password `sp-admin`. The password must consist of six to 32 alphanumeric characters only.
   - In **Password Confirmation**, retype the new password.
4. Click **Update Settings**. The message *Your parameters were saved* appears.

You have completed changing the default login settings. The next time you log in to the Web interface, make sure you use these updated login settings.

Figure 44. The Configuration > Device page



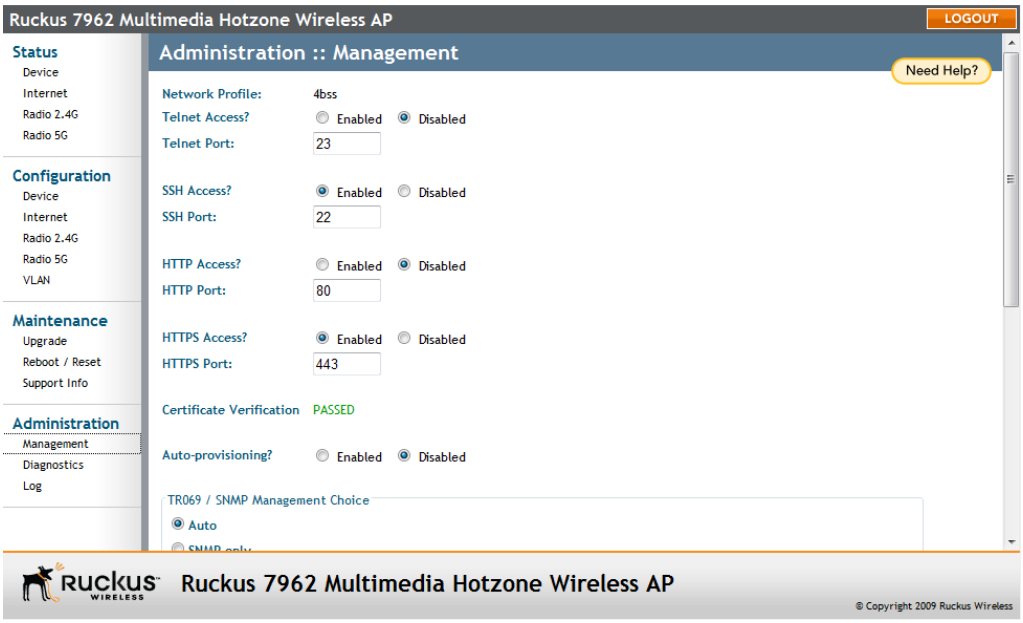
Enabling Other Management Access Options

In addition to managing the AP via a Web browser through HTTPS, several other management access options are available on the AP. These options include management access via HTTP, Telnet, and SSH.

In addition to these management access options, you can also view and set up the connection to the Ruckus Wireless FlexMaster under the **TR-069/SNMP Management Choice** options. If your ZoneFlex device is to be managed by FlexMaster, then the FlexMaster information (server URL and contact interval) is preconfigured before you receive your ZoneFlex device.

NOTE: If you are configuring the AP to be managed by FlexMaster, remember to point it to the FlexMaster server after you configure the management access options. For more information, refer to "Viewing FlexMaster Management Status" on page 88.

Figure 45. The Administration > Management page



To enable other management access options

1. Go to **Administration** > **Management**. The Management page appears.

2. Review the access options listed in Table 27, and then make changes as needed.

Table 27. Management Access Options

Option	Description
Telnet access	By default, this option is disabled (inactive).
Telnet port	This field lists the default Telnet port of 23 — only if Telnet is active. You can manually change this port number, if required.
SSH access	By default, this option is enabled (active).
SSH port	This field lists the default SSH port of 22—only if SSH is active. You can manually change this port number if required.
HTTP access	This option is disabled by default.
HTTP port	This field lists the default HTTP port of 80, if HTTP has been activated. You can manually change this port number if required.
HTTPS access	By default this option is enabled. This connection mode requires a security certificate, a copy of which has been pre-installed in the device.
HTTPS port	This field lists the default HTTPS port of 443—only if HTTPS has been activated. You can manually change this port number if required.
Certification Verification	This notes whether the security certificate linked to the HTTPS settings has been passed or not.

3. If you want to use TR-069 or SNMP to manage the AP, configure the settings listed in Table 28.

Table 28. TR-069 and SNMP Management Options

Option	Description
Auto	Enables the ZoneFlex device to connect to either SNMP server, Ruckus Wireless ZoneDirector, or Ruckus Wireless FlexMaster.
SNMP only	Only allow SNMP management
FlexMaster only	Only allow FlexMaster management
DHCP Discovery	URL of server providing DHCP
FlexMaster Server URL	URL of the FlexMaster server

Table 28. TR-069 and SNMP Management Options

Option	Description
Digest-authentication Username/Digest-authentication password	This information is automatically generated by the AP and used for authentication with FlexMaster. Change this value *only* if you want the AP to connect to another access control server (ACS).
Contact FlexMaster every	Interval at which the device should attempt to contact FlexMaster
Associated-Clients Monitoring Mode	When enabled, the AP monitors the association and disassociation activities of wireless clients and sends this information to FlexMaster. Available options include: • **Disable (default)**: Select to turn off client association monitoring. When this option is selected, the AP will not send client association information to FlexMaster; Flexmaster will need to retrieve this information from the AP. • **Passive**: Select to enable client association monitoring and send related information to FlexMaster at the next inform interval. • **Active**: Select to enable client association monitoring and define the monitor interval (Interval). The AP will check for client association based on the defined Interval (in seconds), and then send related information to FlexMaster as soon as an association event is detected.

4. Click **Update Settings** to save your changes. A confirmation message appears at the top of the page.

You have completed configuring the management access options.

Viewing FlexMaster Management Status

If you configure the AP to be managed by FlexMaster, you can check the *TR-069 Status* section on the **Administration** > **Management** page.

Figure 46. TR-069 status information

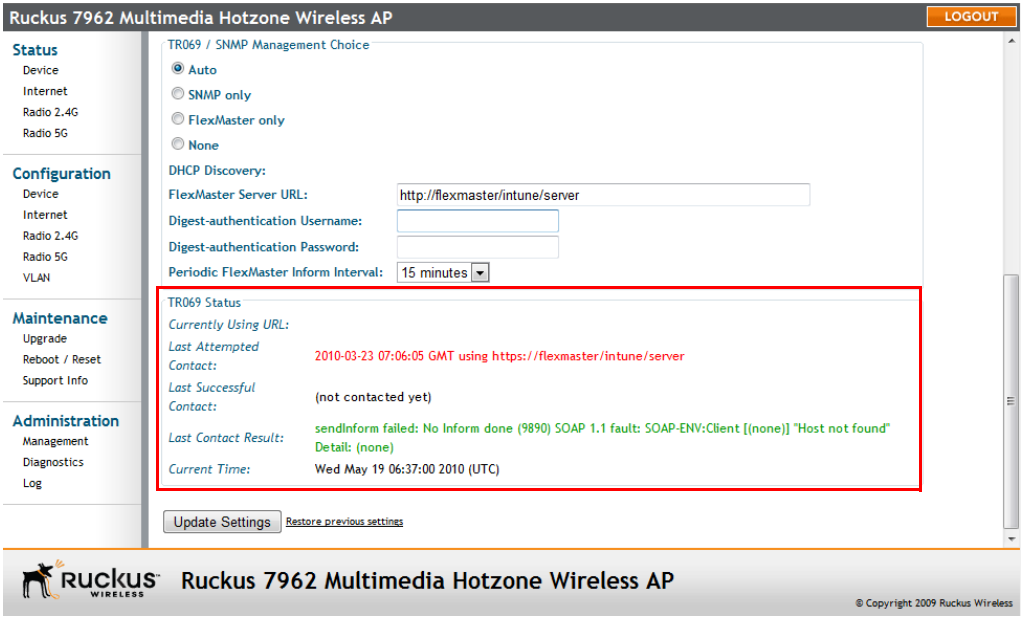


Table 29 lists the TR-069 status information that the AP provides.

Table 29. TR-069 status information

Status Information	Description
Currently using	Shows the FlexMaster server IP address or URL with which the AP is currently registered
Last attempted contact	Shows the date and time of the AP's last attempt to contact FlexMaster. Date and time are specified in GMT (or UTC), which are accurate if a Network Time Protocol (NTP) server is configured.
Last successful contact	Shows the date and time of the AP's last successful contact with FlexMaster.
Current time	Shows the current date and time as known to the AP. This timestamp is accurate if an NTP server is configured on the AP. If there is no NTP server configured, this timestamp is useful as a reference for comparison of the timestamps for **Last attempted contact** and **Last successful contact**.

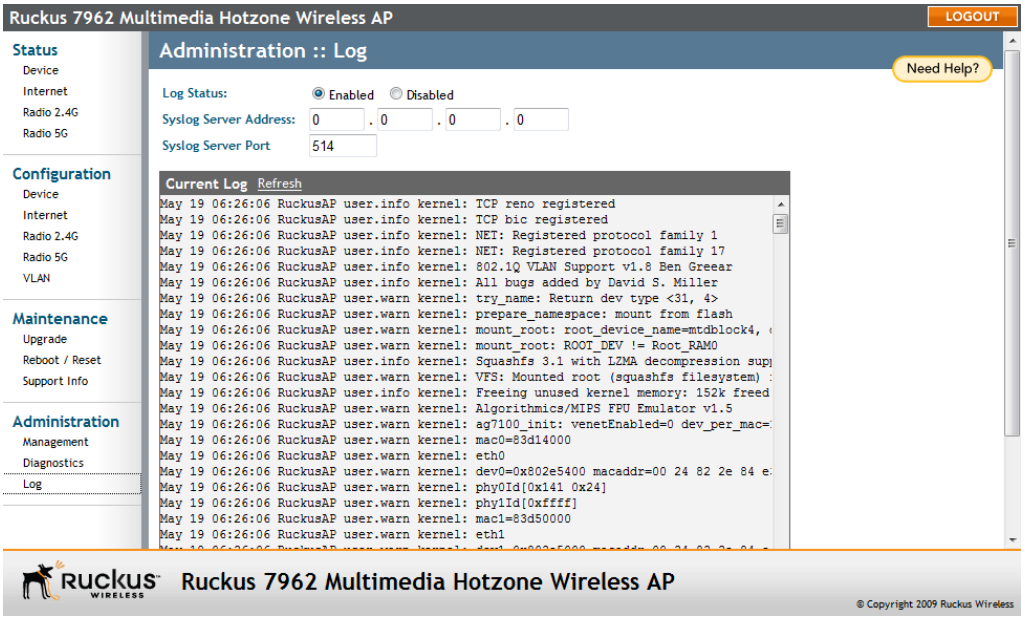
Working with Event Logs and Syslog Servers

Enabling Logging and Sending Event Logs to a Syslog Server

If you have a syslog server on the network, you can configure the Access Point to send the device logs to the server. You will need to enable logging (logging is disabled by default), and then configure the Access Point to send logs to the syslog server.

1. Go to **Administration** > **Log**. The Administration :: Log page appears.
2. Look for **Log Status,** and then click **Enabled**.
3. After enabling logging, configure the following options:
   - **Syslog Server Address [Optional]**: To enable the AP to send messages to a syslog server as they appear, enter the IP address of the syslog server.
   - **Syslog Server Port**: By default, the syslog port number is 514. If the syslog server is using a different port, enter that port number in this field.
4. Click **Update Settings** to save and apply your changes.

Figure 47. The Administration :: Log page


Ruckus 7962 Multimedia Hotzone Wireless AP
LOGOUT
Status
Device
Internet
Radio 2.4G
Radio 5G
Configuration
Device
Internet
Radio 2.4G
Radio 5G
VLAN
Maintenance
Upgrade
Reboot / Reset
Support Info
Administration
Management
Diagnostics
Log
Administration :: Log
Need Help?
Log Status: Enabled Disabled
Syslog Server Address: 0 . 0 . 0 . 0
Syslog Server Port 514
Current Log Refresh
May 19 06:26:06 RuckusAP user.info kernel: TCP reno registered
May 19 06:26:06 RuckusAP user.info kernel: TCP bic registered
May 19 06:26:06 RuckusAP user.info kernel: NET: Registered protocol family 1
May 19 06:26:06 RuckusAP user.info kernel: NET: Registered protocol family 17
May 19 06:26:06 RuckusAP user.info kernel: 802.1Q VLAN Support v1.8 Ben Greear
May 19 06:26:06 RuckusAP user.info kernel: All bugs added by David S. Miller
May 19 06:26:06 RuckusAP user.warn kernel: try_name: Return dev type <31, 4>
May 19 06:26:06 RuckusAP user.warn kernel: prepare_namespace: mount from flash
May 19 06:26:06 RuckusAP user.warn kernel: mount_root: root_device_name=mtdblock4,
May 19 06:26:06 RuckusAP user.warn kernel: mount_root: ROOT_DEV != Root_RAM0
May 19 06:26:06 RuckusAP user.info kernel: Squashfs 3.1 with LZMA decompression sup
May 19 06:26:06 RuckusAP user.warn kernel: VFS: Mounted root (squashfs filesystem)
May 19 06:26:06 RuckusAP user.info kernel: Freeing unused kernel memory: 152k freed
May 19 06:26:06 RuckusAP user.warn kernel: Algorithmics/MIPS FPU Emulator v1.5
May 19 06:26:06 RuckusAP user.warn kernel: ag7100_init: venetEnabled=0 dev_per_mac=
May 19 06:26:06 RuckusAP user.warn kernel: mac0=83d14000
May 19 06:26:06 RuckusAP user.warn kernel: eth0
May 19 06:26:06 RuckusAP user.warn kernel: dev0=0x802e5400 macaddr=00 24 82 2e 84
May 19 06:26:06 RuckusAP user.warn kernel: phy0Id[0x141 0x24]
May 19 06:26:06 RuckusAP user.warn kernel: phy1Id[0xffff]
May 19 06:26:06 RuckusAP user.warn kernel: mac1=83d50000
May 19 06:26:06 RuckusAP user.warn kernel: eth1
Ruckus WIRELESS
Ruckus 7962 Multimedia Hotzone Wireless AP
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Sending a Copy of the Log File to Ruckus Wireless Support

The Support Info log consists of the configuration and run-time status of the AP and can be useful for troubleshooting. You have three options for sending a copy of the current log file to Ruckus Wireless Support:

- Save a copy to your local PC, then attach it to an e-mail message and send it to support
- Set up a connection to an FTP site
- Set up a connection to a TFTP site

To take advantage of these options

1. Go to **Maintenance** > **Support Info**. The Maintenance :: Support Info page appears.
2. Review the Upload Method options.
3. To upload a copy of the support info file to an FTP or TFTP server, click the TFTP or FTP option. Clicking the FTP option prompts you to enter a User ID and Password.
4. In **Server Address**, enter the FTP or TFTP server IP address.
5. In **Filename**, enter a name for this file that you are saving.

NOTE: Remember to add a .TXT file extension to the file name, especially if you are using Internet Explorer as your Web Admin "host."

6. Click **Upload Now**.

Saving a Copy of the Current Log to Your Computer

You can also save a copy of the current log to your own computer, if needed.

1. Go to **Maintenance** > **Support Info**. The Maintenance :: Support Info workspace appears.
2. Review the Upload Method options
3. Click the **Save to local computer** option. Two links appear next to **Download** (*supportinfo.txt* and *tr069info.txt*).
4. Click the **supportinfo.txt** link. A new window (or tab) opens with the content of the log file displayed.
5. Choose **Save As** or **Save Page As** from your browser's **File** menu.
6. When the "Save as..." dialog box appears, find a convenient location on your local computer to save the file, and change the file extension from *html* to *txt*.
7. Click **Save** to save the file to your computer.

Upgrading the Firmware

You can use the Web interface to check for software updates/upgrades for the firmware built into the AP. You can then apply these updates to the device in one of two ways: (1) manual updating on an as-needed basis or (2) automating a regularly scheduled update.

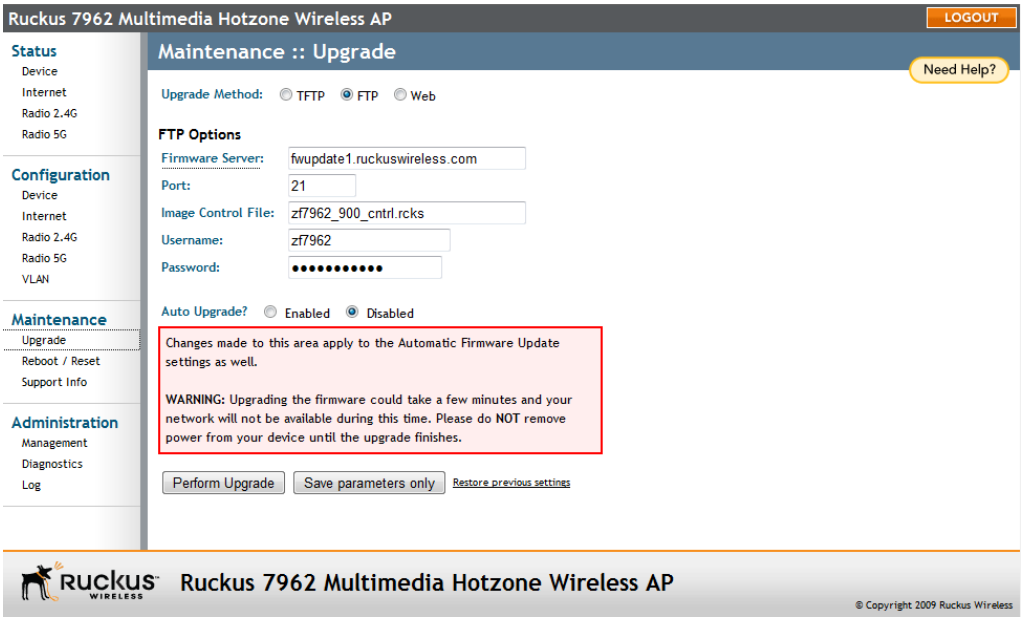
Before starting, decide which option you want to take:

- Automate a regularly scheduled update
- Run a one-time manual update right now

By default, the automatic upgrade option is active, and will check the Ruckus Wireless update server every 12 hours.

To get started with upgrading the firmware, go to **Maintenance** > **Upgrade**. When the **Maintenance** > **Upgrade** options appear, decide which upgrade method to use. Each of the three upgrade options listed on the Upgrade page are discussed in the succeeding sections.

Figure 48. The Maintenance > Upgrade page



Upgrading Manually via the Web

1. In the **Upgrade Method** options, click **Web**.
2. Click the **Web Options URL** field, and then type the URL of the download Web site. Remember to start the URL with "http://".
3. You can change the Image Control File filename extension as noted here:
   - Replace any file names ending in `.rcks` with the `.html` extension
   - Replace any file names ending in `.fI7` with the `.html` extension

CAUTION: Do not change the **Username** or **Password** entries.

4. Click **Perform Upgrade**. A status bar appears during the upgrade process.
5. After the upgrade is completed, you must manually reboot the AP.

Upgrading Manually via FTP or TFTP

1. In the **Upgrade Method** options, click **FTP** or **TFTP**.
2. Click the host name field, and then type the URL of the server. Or click the IP address field, and then type the IP address of the server. Remember to start the URL with `ftp://`.

CAUTION: Do not change any of the Image Control File, Username, or Password entries.

3. Click **Perform Upgrade**. A status bar appears during the upgrade process.
4. After the upgrade is completed, you must manually reboot the AP.

Scheduling an Automatic Upgrade

1. In the Upgrade Method options, click the button for your preferred choice.
2. Enter the appropriate information in the Host name field or IP address field.

CAUTION: Do not change any of the Image Control File, Username, or Password entries.

3. Verify that the Auto Upgrade: Enabled option is checked (active).
4. Toggle the Interval to Check for Software Upgrade drop-down list to select your preferred interval.
5. You have two options at this point:
   - Click **Perform Upgrade**, which will start the process and the clock. The next upgrade will occur at the selected interval.
   - Click **Save parameters only**. The clock starts right away, and the actual upgrade will occur at the first effective interval.

   After you click one of these two options, a status bar appears during the upgrade process.

When the upgrade is complete, the AP will reboot automatically.

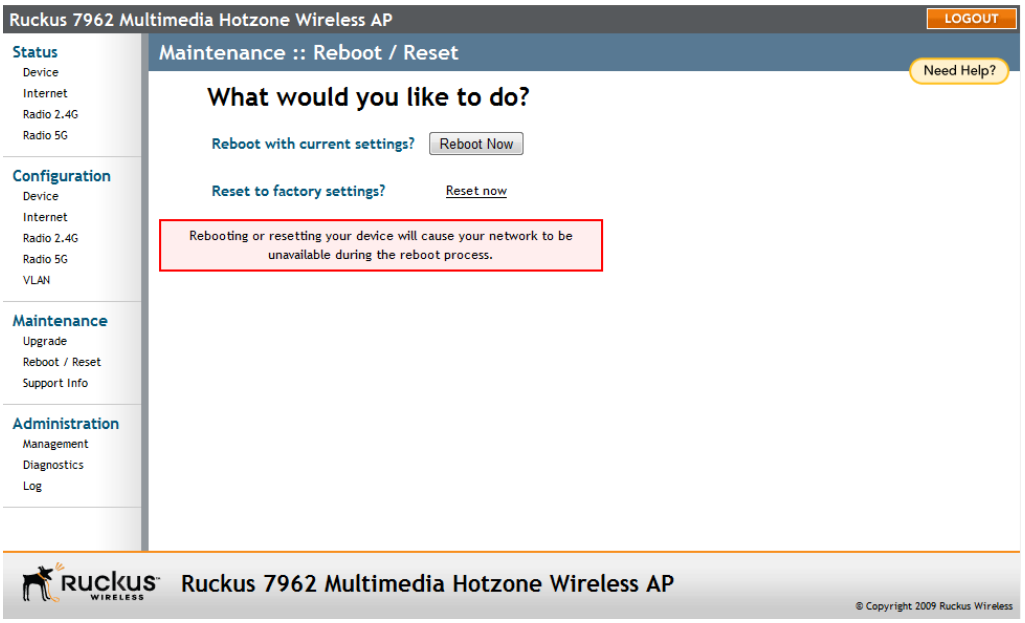
Rebooting the Access Point

You can use the Web interface to prompt the AP to reboot, which simply restarts the AP without changing any of the current settings. Please note that rebooting the AP will disrupt network communications in any currently active WLANs.

To reboot the Access Point

1. Go to **Maintenance** > **Reboot/Reset**. The Maintenance :: Reboot/Reset page appears.
2. Click **Reboot Now**. After a brief pause, you will be automatically logged out of the AP.

Figure 49. The Maintenance :: Reboot/Reset page



After approximately one minute, you should be able to log back into the AP, which verifies that the reboot was successful. You can also check the LEDs on the AP to verify the status of the device.

Resetting the Access Point to Factory Defaults

WARNING: DO NOT reset the Access Point to factory defaults unless you are directed to do so by Ruckus Wireless support staff or by a network administrator. Do this only if you are able to immediately reconnect the restored AP to your computer, to reconfigure it for Wi-Fi network use — as detailed in "Installing the Access Point" on page 25.

You can use the Web User interface to restore an inoperative AP to its factory default settings, which will completely erase the configuration currently active in the device. Note, too, that this will disrupt all wireless network communications through this device.

To reset the Access Point to factory defaults

1. Go to **Maintenance** > **Reboot/Reset**. The Maintenance :: Reboot/Reset page appears.

2. Click **Reset Now** (next to *Restore to factory settings*?).

After a brief pause, you will be automatically logged out of the AP. You must now disconnect the AP from the switch (and the network) and reconnect it to your computer, as described in "Step 1: Preconfigure the Access Point" on page 31. At this time, you can restore the network settings, then replace it in your site for full network use.

Running Diagnostics

Two network connection diagnostic tools – PING and traceroute – have been built into the AP to help you check network connections from the Web interface.

To run diagnostics for network troubleshooting

1. Go to **Administrator** > **Diagnostics**. The Administrator :: Diagnostics page appears. Two options are available:
   - Ping
   - Traceroute
2. Click the text field by the option you want to activate, and type the network address of a site you wish to connect to.
3. Click **Run Test**.

The results appear in the text field below each option.

Figure 50. Pinging ruckuswireless.com

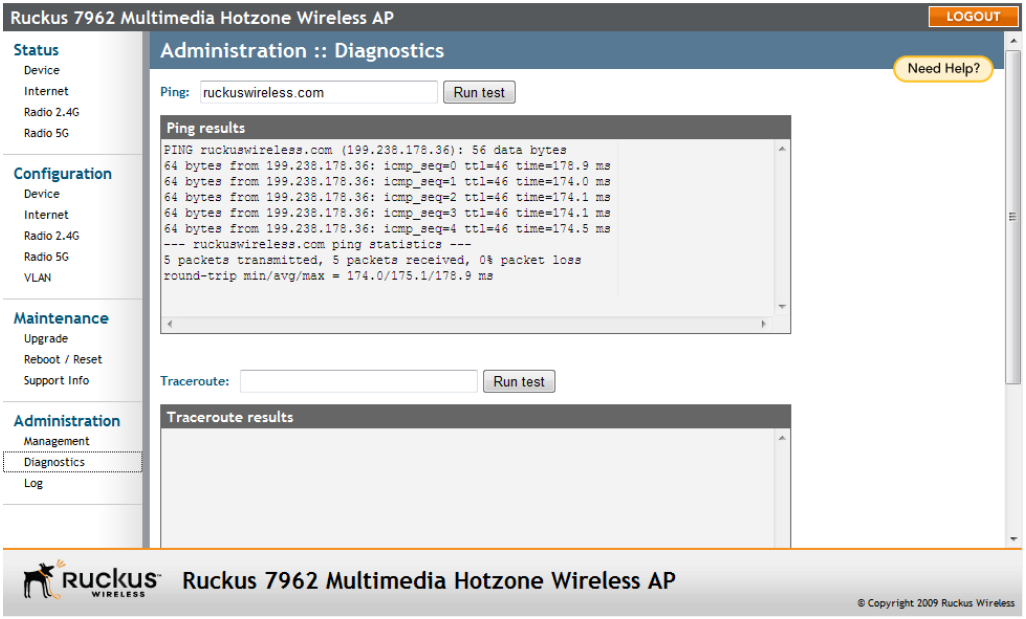
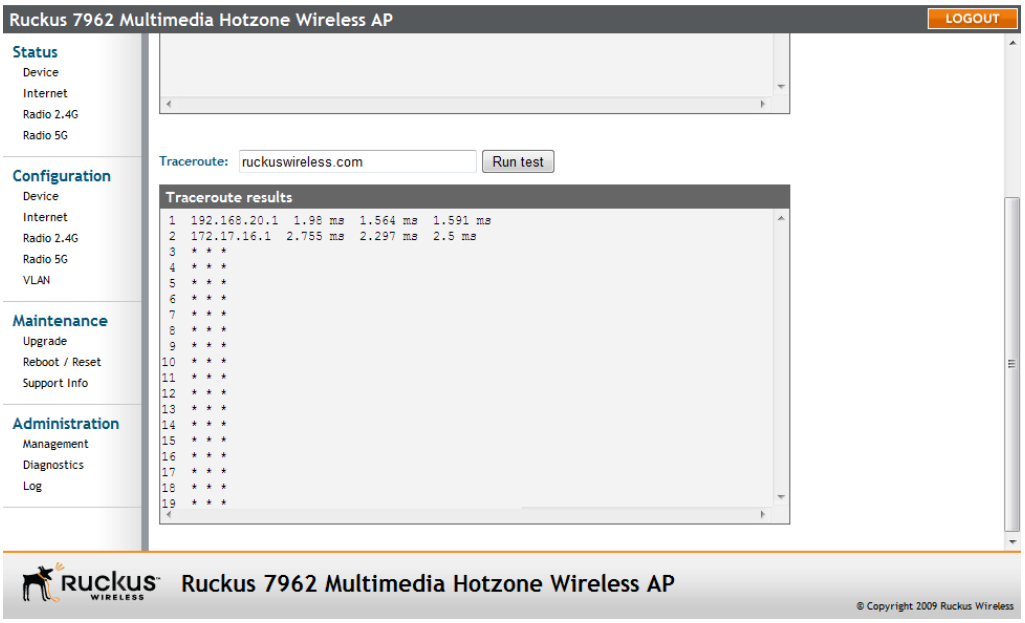


Figure 51. Running traceroute on ruckuswireless.com



Where to Find More Information

If you have questions that this User Guide does not address, visit the Ruckus Wireless Support Portal at http://support.ruckuswireless.com/. The Support Portal hosts the latest versions of user documentation. You can also find answers to frequently asked questions (FAQs) for each Ruckus Wireless product type.

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